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THE CANADA
EDUCATIONAL MONTHLY
AND SCHOOL CHRONICLE.

SEPTEMBER, 1880.

DEPARTMENTAL EXAMINATIONS.*

BY D. C. M'HENRY, M.A., PRINCIPAL, COLL. INST., COBOURG.

THE necessity for some such examinations as those now conducted by the Education Department cannot be doubted. On this point there is no great difference of opinion. Their peculiar departmental character arises from the direct oversight which the State in this as in every enlightened country is giving to the cause of education ; and, more particularly, from the financial aid which our several municipalities receive from the general treasury, to supplement local contributions for educational purposes.

Good schools presuppose good teachers, and good teachers must receive suitable remuneration. To determine their qualifications there must be certain standards to which they shall be required to attain. And, to pay them suitably, legislative aid is found necessary. Hence our Exam-

inations, and their departmental character.

The utility of these examinations, of course, depends on their adaptation to the end in view, and on their thoroughness and fairness. Examinations for teachers ought to be of such a nature as to necessitate careful preparation both of the *matter* to be afterwards taught, and the best *methods* of instruction.

Our examinations, non-professional and professional, are supposed to meet the general requirement of furnishing the country with a supply of properly qualified teachers.

I believe that these tests are superior to those of former years, and that no serious objections can be urged against them.

We are not assembled, however, to sit in mute admiration of any part of our educational system, simply because it is an improvement on the past. Had that course been hitherto

* A paper read before the High School Section of the Provincial Teachers' Association.

pursued we might still be trudging along in the old paths, the slaves of methods long since laid aside.

With a view, therefore, to elicit opinion, and, if necessary, to secure improvement in certain particulars, I shall venture to suggest a few modifications which I think might be advantageously adopted.

And, first of all, it seems to me that while the Education Department should take a very prominent part in all matters pertaining to our schools, the present tendency is rather to ignore local interest and supersede local control by centralizing all real power in a non-representative and semi-responsible body.

It has long been deemed a fundamental principle in our educational polity that an interest can best be created and sustained by extending to the people a fair share of authority. For reasons not fully apparent, a centralizing policy seems now to prevail, the most objectionable feature of which is, as before remarked, that privilege and power—withdrawn from the people—are being entrusted to a select committee on which the people have no direct representation.

Probably many of the changes introduced from time to time would meet with less opposition if those most directly interested were represented on this executive council. All this may be said without in any way reflecting on the gentlemen selected as members of this Central Committee. It is the *principle* adopted—superseeding our former representative system—to which exception is here taken.

From some cause or other, our present methods are considered unreasonably expensive. If the accumulation in Toronto of work formerly done throughout the Province sufficiently accounts for the present outlay, it is quite susceptible of demonstration, and the necessary information should be given. The *results* now ob-

tained by our educational machinery, speaking particularly of examinations, are by many considered incommensurate with the cost to the country.

If our High School grants, for example, are not increased in proportion to the increase of work assigned them; if, as some trustees assert, "*the mill in Toronto is keeping the grist and giving them the toll*," if, in short, there is any misappropriation of school funds, it ought to be rectified in a manner satisfactory to any reasonable demands of trustees and teachers.

To speak of examinations more in detail, I believe the

ENTRANCE EXAMINATION

would be more effectual (1) if adjacent Public Schools were encouraged to use it more generally as a test for promotion from the fourth form; (2) if more definite instructions were given Head Masters as to their presiding and the remuneration to be received. Whatever perquisites are available should be secured to those who have to do the work. The Inspector, in other words, should not be burdened with the distribution of this patronage among outsiders. (3) The time for holding the examination should be more definitely fixed. (4) I think the end sought might be attained, with a saving of both labour and expense, if, in making our returns, the *total on each subject* were given (as in case of third class teachers) without the tedious process of entering the value given to *each answer*.

THIRD CLASS EXAMINATION.

The adoption of the Intermediate for the County Board examination is likely to meet with very general approval, if a committee of examiners can be secured large enough to carefully examine the papers in time to prevent confusion at the opening of schools after

vacation. The certificate will doubtless have a provincial value, and therefore every county can be supplied with teachers. It will tend to remove from thousands of mere boys and girls the temptation of trying to pass the third class examination; and it will likely reduce the thousands of surplus teachers in our country. Again Public School teachers will be less likely to neglect their ordinary duties for the special work of preparing teachers, most of whom will hereafter find it to their advantage to attend High Schools. A very careful check will be needed, however, at the Model Schools, on the admission of pupil-teachers under age, since there is no restriction in case of Intermediate candidates.

In the general character of third class papers, I know of nothing which calls for special notice. As a whole, I think they could not be materially improved.

THE INTERMEDIATE EXAMINATION

has its friends and its opponents, simply because, while it has many advantages, it is not without its disadvantages. The change from semi-annual to annual has removed some serious objections; while the favourable recognition it is receiving from several of our Universities, the Medical Council, and the School of Practical Science, will greatly add to its practical value. There are still some examining bodies whose concurrence we must try to secure, especially the Law Society and Toronto University. If the promoters and friends of the Intermediate can aid us in these directions, they will take the surest way of rendering it still more acceptable.

Any examination adopted by the Department merely, or even primarily, to determine the apportionment of legislative aid, is likely to be regarded as an unwelcome burden imposed on our schools, and one which does not

furnish such motives as are needed in order to secure the hearty co-operation of our pupils. Such was the Intermediate at first, and hence the suspicion with which it was regarded by both teachers and pupils.

In reference to the instructive and educating influences of this examination, while I think they are somewhat over-rated, I believe a more definite direction is given to our work than under the former arrangement.

The evils peculiar to any such general change appeared on its introduction. Some of these evils may be fairly regarded as inevitable; others certainly arose from overburdening teachers and pupils.

The pecuniary advantages, at first promised, absorbed the attention of trustees and teachers to such an extent as to induce an unhealthy and, in some cases, undignified competition, the evil effects of which are still to be seen. The grant per pupil has become so small that less importance is now attached to the examination than at first. It is generally admitted, indeed, that to be guided merely by the results of the Intermediate may prove disappointing to trustees and unjustly humiliating to faithful and efficient teachers.

The arrangement of subjects and options appears to give general satisfaction. A change will be necessary, however, in the case of students who are aiming at the Medical Council matriculation, since, in addition to compulsory subjects, they are required to take the Science group, Latin, and either French or German. As the time-table is now arranged, only one of these groups can be taken.

Some fault has been found with the method adopted, apparently with design, for lessening the chances of candidates at this examination. If the increase of candidates, to between three and four thousand, be deemed too great, there are several unobjec-

tionable modes of reducing the number; one, by exacting a higher percentage; a second, by an increase of work in a given time. There is still another, by purposely giving to one or more of the papers such an unusual turn as is not anticipated in the general line of teaching pursued. The last plan we think is hardly justifiable. Having reference to the programme of study and to former papers on the same subject, the course is construed into a breach of faith, as between pupil and examiner. These remarks will be thought irrelevant by those who have heard no complaints in the direction indicated.

Of the

FIRST CLASS EXAMINATION

I shall merely say that we must all approve of the recent regulation by which honor undergraduates of our universities are admitted as having passed an equivalent for the non-professional examination. As before remarked, I regard our Departmental Examinations superior to those they superseded. At the same time I do not think that their warmest admirers consider them incapable of improvement. Any reasonable suggestions to which our discussions may give rise will therefore be likely to receive due attention from the Minister and his advisers.

THE DECAY OF READING.

BY RICHARD GRANT WHITE.

IT used to be supposed that the acquirement of "the three R's" was such a simple matter, and so entirely within the capacity of even the lowest intelligence, that a child who had had any schooling at all must know how to read, and to write, and something of arithmetic. And in very deed it was so. But that was in the days when education had not been made a science, when teachers called themselves simply teachers, and not educators, and when "educational" books and magazines were unknown. The teacher then, having some knowledge, some faculty of imparting it, and some love for his function, went simply and honestly to work and taught his pupils, without troubling himself about philosophies and systems of education. And, however this may be, the result as to the first two of the three R's was that there was hardly a school-boy of seven or eight years old who could not read a narrative book aloud with correctness

and tolerably good accent and emphasis, and who could not write, although in boyish hand and boyish phrase, a tolerably well-spelled letter of a few lines to his mother. But now that we have an educational science, and professors of the art of teaching, and schools of teaching, and everything about teaching is educational exquisitely, we hear on all sides the complaint that great boys and girls who are learning what in elementary schools are called "additional branches" cannot read a story or a paragraph in a newspaper aloud in an intelligible manner, or write from dictation a simple sentence so that it can be understood. As to reading, the complaint is peculiar to no country. A late number of the *Saturday Review* has an article on "Reading Made Uneasy," of which the following is the first paragraph:

"The reports of the School Inspectors, which are printed in the appendix to the annual report of the Education Department,

bear out with unpleasant uniformity the observations of Lord Sherbrooke upon the kind of reading which is to be had from the higher classes in elementary schools. Without a single exception they all tell the same story, and that story is one of the most discouraging character. The reading is bad all round. The children never read readily except when the exercise they are going through, though it may be called reading, is really recitation. Even then, though they may read readily, they read entirely without expression; and when they are asked to explain the meanings of the words they have used they shew that they have not attached the slightest meaning to what they have been reading."

And Mr. Robert Lowe, member of Parliament, who is almost blind, sent a letter to a phonetic-spelling-reform convention, complaining that he could not find a boy or girl who could read the newspapers intelligibly to him.

Now, the cause of this is bad teaching by incompetent persons—teaching which amounts really to no teaching at all. Upon this point the Rev. Mr. Stewart, whose report I referred to lately, speaks to the purpose, when he says "schools are not now as successful as they once were in giving children the real education which is wholly never lost;" and he is also right in regarding "the ambitious multiplicity of subjects" which teachers introduce into their courses of instruction as one of the chief causes of this failure. True, they do this in a measure to meet the views of ignorant parents, who desire that their children should be possessed of some knowledge, which is on the one hand showy or on the other money-getting, rather than that they should be well settled in the groundwork of all knowledge, and so disciplined in mind and in conduct that they shall be fitted to go on effectually in a well-systematized education, should that be possible and desirable. But none the less is this sort of so-called education in the higher branches equally injurious and foolish. I saw a school-girl the other afternoon in a street car

going home from a public school; and in her strap she had thirteen books, all of them school-books, as I saw. Thirteen books! one, at least, for every year of her life! and after confinement at school from eight o'clock in the morning, and a luncheon of pie and pickles, she was going home to more confinement, and more pie and more pickles. And we wonder that nervous diseases abound among women; and that many of our young mothers have unnatural trouble at the birth of their children. It would be better for that girl, it would be better for the husband that she hopes to have and the children that she will probably have, it would be better for society, if she lived upon oat-meal and milk, and knew only how to read well aloud, to write a plain hand, to add and multiply and divide correctly, and how to make her own clothes with her own fingers. Not one of these can she probably do, and her school-mates are most of them as incapable in these respects as she is. So likewise are boys in general of the same age and position, although both boys and girls have a smattering of more ambitious "branches" of knowledge. To these remarks there are, of course, exceptions; the exceptions being the exceptional boys and girls, born thinkers and brain workers, whose acquirement of knowledge and of education in some way or other it is not easy to restrain.

Of all knowledge and mental training, however, reading is in our day the principal means, and reading aloud intelligently the unmistakable, if not the only, sign. Yet this, which was so common when the present generation of mature men were boys, is just what our highly and scientifically educational *ed-u-ca-tors* seem either most incapable or most neglectful of teaching. And yet the means by which children were made intelligent and intelligible readers thirty-five or

forty years ago were not so recalcitrant as to be beyond attainment and use by a teacher of moderate abilities and acquirement who set himself earnestly to his work. As I remember it, this was the way in which we were taught to read with pleasure to ourselves and with at least satisfaction to our hearers. Boys of not more than seven to nine years old were exercised in defining words from an abridged dictionary. The word was spelled and the definition given from memory, and then the teacher asked questions which tested the pupil's comprehension of the definition that he had given, and the members of the class, never more than a dozen or fourteen in number, were encouraged to give in their own language their notion of the word and to distinguish it from so-called synonyms. As to the amount of knowledge that was thus gained it was very little—little, at least, in comparison with the value of this exercise as education, that is, of mental training, which was very great. The same class read aloud every day, and the books that they read were of sufficient interest to tempt boys to read them of themselves. The class was called up before the teacher, and ranged itself—"dressed," as the soldiers say—in line. At a signal they all bowed together a profound bow, and if this was done awkwardly by the class as a whole, or by any individual, the process was repeated and instruction was given by the teacher, with example. No bobbing of heads was allowed, no awkward position of the arms and hands, or of the legs and feet, was passed over unnoticed. A decorous bow from a boy to his master or his elder was a matter of the minor morals. When the reading began all the class were obliged to follow the reader, each in his own book; for any pupil was liable to be called upon to take up the recitation,

even at an unfinished sentence, and go on with it; and if he hesitated in such a manner as shewed that his eye and mind were not with the reader's, the effect upon his mark account was the same as if he himself had failed in reading. If the reading of any sentence did not shew a just apprehension of its meaning the reader was stopped, and the sentence was passed through the class for a better expression of its sense. Whether this was obtained from the pupils or not, the teacher then explained the sense, or gave some information, the want of which had caused the failure, and by repetition of both readings—the bad and the good—shewed by contrast and by comment why the one was bad and why the other good. Words were explained; if they were compound words they were analyzed; the different shades of meaning which words have in different connections were remarked upon, and the subject of the essay, the narration, or the poem which formed the lesson for the day was explained. The delivery of the voice was attended to; not in any pretentious, artificial, elocutionary way, but with such regard for good and pleasant speech as was dictated by common sense and good breeding. The young readers were not allowed to hang their heads either over their bosoms or over their shoulders, but were made to stand up straight, throw back their shoulders, and lift their heads well up, so that if their eyes were taken from their books they would look a man straight in the face. Only in this position can the voice be well delivered. The slightest mispronunciation was, of course, observed and corrected, and not only so, but bad enunciation was checked, and all slovenly mumbling was reprehended, and as far as possible reformed. Yet with all this there was constant caution against a prim, pedantic, and even a conscious mode of

reading. The end sought was an intelligent, natural, and simple delivery of every sentence.

Of course, a lesson in reading like this was no trifling matter. It was, indeed, the longest recitation of the session, and the one at which the instructive powers of the teacher were most severely tested. But it was the most valuable, the most important, lesson of the day. By it the pupil was taught not only to read well and speak well, but to think. His powers of attention and apprehension were put in exercise, and he was obliged to discriminate shades of meaning before he could express them by inflection of voice. Reading aloud well was then regarded as inferior in importance to no other "branch" of education; it was practised until pupils were prepared to enter college, the latter reading lessons being taken from Milton or Pope or Burke, or some other writers of the highest class, and being again accompanied by explanation and criticism. In the earlier years of a boy's school-time any other recitation would be omitted by the teacher sooner than that in reading aloud.

How it is, or why it is, that such instruction in reading has fallen into disuse I do not know. Indeed, I know that it is disused only by the chorus of complaint that goes up on all sides, both in England and in the United States, that children cannot read aloud and that they cannot write from dictation. This, of course, could not be if children were taught in the manner which I have endeavoured to describe. A school-boy of eight or nine years old, if taught in that way, would know how to read English aloud decently well, if he knew nothing else. And it is really more important that he should know how to do this well, and that he should learn to do it in some such manner as I have described, than that he should

begin the study of the arts and sciences.

I do not forget that the boys of whom I have been writing were children of parents who themselves were well educated, nor do I underrate the effect which the home associations of such pupils have upon their mental condition, and upon their command of language. Children who live in an atmosphere of intellectual and social culture absorb knowledge as they acquire good manners, unconsciously. Above all do they acquire unconsciously such a command of language, and also of the voice, as is attained by others only by severe training, which must be begun in early years. There is nothing more unmistakable than the voice of a cultivated person. Few such persons lack this voice; and those few fail to possess it from some accident or some vocal malformation. It is needless to say that the vocabulary of an educated person is easily distinguishable from that of one uneducated. And this difference begins to shew itself in very early years. Children who live among cultivated people usually know the meaning of more words than they can write—of more than they have ever seen. They can understand the talk of their elders, even when their ignorance of the subject under consideration would prevent them from joining in it so far as it would be becoming for them to do. When they come to read their trouble is rather to fit the signs of the words to the sounds than to understand the words or to pronounce them properly.

It is not so with the children of the uneducated, who largely, but by no means exclusively, fill our public schools. They come with a very limited vocabulary, a perverted notion of the meanings of words, with a bad pronunciation, with slovenly habits of mind and of speech. But, on the assumption that it is a good thing for

everybody to be educated, are we, because of the incompetence into which they are born and bred, justified in slighting this matter of reading aloud in their case, in order that they may "get on" with the elegant superfluities of education? It would seem to be thought so; and yet the question just asked shews the absurdity of such an assumption. *A fortiori*, because they cannot read well, because they are slow at learning to read, slow at understanding what they read, they should be taught to read. They should be taught it at any expense of time and of trouble. They should be taught to read well, if they are taught nothing else. I am speaking not in hyperbole, but in plain sobriety of phrase, and, after consideration of the subject, when I say that it would be

better for those pupils of our public schools who enter them at six years of age, let us say, and leave them at twelve, that, *if it were necessary*, they should spend the whole of those six years in learning merely to read aloud well, to write easily and correctly from dictation, and to add, multiply, and divide readily, than that they should know by heart all the books that were ever carried back and forth by pie and pickle eating school-girls. But that this view of the subject will be taken by the public generally I have not the least hope. For, although in this matter the teachers are in fault, the public is most in fault. Our public school system is, to please the public, made the most pretentious sham of all our public sham pretences. —*N. Y. Times*.

A VISIT TO AN ENGLISH "BOARD SCHOOL."

BY MISS EMERY, MODEL SCHOOL, YORKVILLE.

MY physician deeming it advisable for me to take a sea voyage, I set sail in April last for that great and wonderful city—London. Among the objects of interest to me were the Board Schools, and I was most anxious to see one of them while the work of the school was in progress. I was received with the utmost cordiality by Mr. Heller, Secretary of the National Union of Elementary Teachers, and of the School Board, to whom I carried a letter of introduction. To the kindness of this gentleman I owe much of the insight that I was able to obtain into the actual work of the schools. The one that impressed me most was that at Peckham Rye. The teachers, one and all, treated me with the greatest courtesy,

and I spent a very pleasant day watching a system of instruction that was entirely new to me. As I entered each room the children all rose to bid me "good morning." There was an appearance of neatness and cleanliness on the part of the children which altogether surprised me, since I had heard much of the lack of personal cleanliness among the lower order of Londoners; but the head mistress explained to me that they did not have the very lowest class of children, for each child had to pay a weekly fee of not less than 2d., and not more than 7d. This compels the very poorest class to send their children to the ragged schools, which are free. All books are provided for the children at the expense of the Board. The only

thing they have to supply themselves with is stationery. The classification is by age. Children can enter the Infants' Department at the age of three. When they are four years old they go to the next higher grade, and so on until seven years of age, when they enter the First Standard. This system has its disadvantages as well as its advantages. For instance, if a child enters a school at the age of seven years, although he may not even know his alphabet he is placed in the First Standard, in which the children are reading "from a book not confined to words of one syllable," and are able to work addition and subtraction in the simplest form. It is left to the teacher to work this child, in the short space of one year, up to the same standard that the other children have taken four years to attain.

For promotion to a higher standard the pupils are examined by the Government Inspector in reading, writing, and arithmetic, and are required to make at least fifty per cent. on *EACH* subject, before they can pass into a higher standard. For every child that passes this examination a Government grant is allowed, provided a minimum of 75 per cent. of the scholars pass, and of this grant half of the whole amount for the girls' school goes to the Head Mistress, while the other half is divided equally among her assistants, and the same in the boys' school. This they get in addition to their regular salary, and the Head Mistress told me that her share of the grant for the preceding year was £150, making her salary come to £300 for that year, while that of the Head Master was nearly double that amount. This, I make no doubt, is a greater incentive to the teachers to work their scholars up to the necessary standard, though enlightened persons of this nineteenth century of ours tell us that regard for

"filthy lucre" should have no place in the teachers' mind, but the small number of men and women who would be found to teach for the "mere love of it" might, I fancy, rather surprise these philosophers.

The London Board Schools are divided into three departments, viz.: The boys' school, the girls' school, and the infant school, in which boys and girls are together. All these departments are in one building. There is a Head Master over the first and a Head Mistress over each of the others. These have no set class to teach, but go about constantly from room to room inspecting the work of the assistant and pupil teachers. In the infant school pupils are received up to the age of seven years, then after passing the required examination they are promoted to the upper school. The order throughout the school, even to the little three-year old children, many of whom could not speak plain, was remarkably good. The children in the infant school are taught entirely on the kindergarten system, and they had not the wearied, tired-out look that so many of the very young children in our schools often wear. They played their games with zest, and appeared to feel none of the restraint of being in school. I happened to be present in the room when they were marching to the song "Little drop of sparkling dew," and it was amusing to hear the tiny tots in their infantile fashion, render it "Wittle dop of tarkling dew."

Every teacher seemed to be thoroughly capable of doing the work assigned to her, and the sympathy between teachers and scholars appeared most marked.

The writing was good throughout, but the reading was simply atrocious. They dropped their H's and picked them up again, not by the bushel, but by the cart-load, while the pecu-

liar Cockney drawl that every child seemed to think it his and her peculiar duty to give to such words as "round" and "pound" to my Canadian ears was extremely ludicrous.

I heard the Head Master give a lesson in Proportion which seemed to me so clear that the boy must be dull indeed who did not comprehend it; while a lesson in History was given by one of the lady teachers, which was listened to by the children with rapt attention. I did not see one teacher use a book in giving a lesson all the time I was at the school, and I stayed one whole day. Each one seemed to have the explanations they intended to give at his or her fingers' end.

I was fortunate in being present on the day when the Inspector of Music came to examine the pupils on what they had learned. The Tonic Sol-fa system is used entirely, and each teacher is responsible for the instruction of his or her pupils in music. I was very much astonished to see how readily children of the third standard read music, and were able to tell at once, when the Inspector gave them a note, which note it was. The good answering was not confined to one or two but was very general. The masters seemed to be more successful with their pupils on this subject than the mistresses. Special attention is given to needlework in the girls' department, and the beautiful work done by some of the pupils gave evidence that, should they ever become wives and mothers, they would, at least as far as needlework was concerned, make very useful ones. The sewing goes on at the same time in all the different standards, of course varying in difficulty according to the age of the pupil; but every child is doing the same sort of work in one room; for instance in one room they were all making button-holes, and beautifully they made them. In another room

every child was darning, while in yet another they were cutting out undergarments, and in the highest standard the girls were making the garments they had previously cut out. I made a memorandum of the needlework required to be done by the pupils in the different departments, which I venture to transcribe.

IN THE INFANTS' DEPARTMENT.

(Boys and girls both working—five to six years of age.)

Lower Division.

(Position, that for drill.)

Hemming on strips, beginning with black cotton, rising to red, and going on to blue. Knitting (two needles) a strip three inches by eighteen with cotton.

Upper Division.

(Six to seven years of age.)

Threading needles, hemming, sewing, felling, pleating, fixing a hem. Making any garment that can be completed with the above stitches, such as a child's pinafore or chemise. The teacher places the work for the children in making the garments, and they are only required to do the sewing. Knitting a strip, as in the lower division, and muffatees made with four needles.

GIRLS' DEPARTMENT.

(Advanced School.)

1st Stage.—The work of previous stages with greater skill, with the addition of stitching and sewing on strings. Herring-boning a flannel petticoat; knitting with four needles, plain and purled alternately; socks and girls' stockings; darning and simple marking on canvas.

2nd Stage.—The work of previous stages with the addition of stitching, gathering, stroking, setting in, marking on coarse material, button-holing;

sewing on buttons, making a plain night shirt, herring-boning; cutting out any plain garment, such as they can make up to this stage; darning and mending stockings and garments; patching old garments; knitting full-sized socks and stockings.

3rd Stage.—The work of previous stages with greater skill. Tucks run; whipping; setting on frills; marking on finer material; making a night-dress, a man's shirt and a girl's frock; knitting a sock or stocking; darning; patching; cutting out any under garment ordinarily required in the families of children attending elementary schools.

6th Stage.—The work of previous stages on finer material and with greater skill. Knitting a long full-sized stocking with heels thickened; darning and patching; cutting out and making any ordinary under-garment required in the families of children attending elementary schools.

The Board supplies the material for the needlework, and the children attending the schools generally buy the work, when it is finished, at reduced rates. In the first four stages the work is placed for the children and cut out; but in the last two they are required to place it and cut it out for themselves. The Head Master and mistress are responsible for the admit-

tance of pupils. The average number of pupils in each division must not exceed forty, and if at the end of the term the average attendance is above the specified number, the Government grant is withheld.

The building is three storeys high, and is of red and white brick. The infants' department is on the lowest floor, the advanced school of girls on the second, while the boys are on the highest. The ventilation was very good, in not a single instance did any room I went into strike me as being offensive. The blackboards used in the school, however, are small, one on a stand in each room about one and a half yards square, was all each teacher had for use. The school apparatus on the whole is not so good as ours, though each scholar had a desk in the highest standard, which had a locker, and no two desks opened with the same key.

The playground was paved entirely with asphalt, and both the school-rooms and playground were scrupulously clean.

I left the building with the feeling that the hours I had passed there had been well spent; and with the conviction that the efficiency of the teachers and the advancement of the scholars were in no whit behind those found in our best Canadian schools.

THE *Sheffield Daily Telegraph* says that during a recent Parliamentary discussion, in which the Irish party were conspicuous, one gentleman, protesting against the logic of another, exclaimed, "Sur, the primisses and conclusions of the honourable mumber don't go together." On which the "mumber" thus alluded to coolly retorted, "Sur, that is quite true. The primisses always come first!"

EDUCATION is not creative; it only assists in developing existing possibilities into realities.—*Brooks*.

THE Executive Committee of the English National Union of Elementary Teachers, at one of their late meetings, entered into a very full discussion of the evils of detaining children in school beyond the proper school hours, and formulated their opinion in the following resolution: "That in the opinion of this Executive, the practice of systematically detaining children in school beyond the usual school hours for the purpose of special preparation for examinations, is prejudicial to the physical and intellectual well-being of the scholars, and is to be condemned."

HISTORY AND ITS STUDY IN OUR SCHOOLS.

BY G. W. FIELD, B.A., HEAD MASTER, ELORA HIGH SCHOOL.

IN these days of warm discussion, when what to teach and how to teach are questions claiming so much space in our educational journals, it is remarkable that so little attention should be given a subject so important as the study of history. Almost every variety of topic has been presented for consideration, almost every scheme ingenuity and thought can suggest for smoothing the path of the learner has been put forth; but that one branch, though carrying with it all the experience of the past, and a thousand lessons for our daily guidance, lies nearly or wholly neglected. At a few—a very few—of the county conventions papers have been read, calculated to bring the necessity of properly teaching history before the public. It has never, as far as I am aware, been considered of sufficient importance to claim the slightest attention at a meeting of the Provincial Association, nor do I remember seeing more than a chance article on the subject in any of our educational journals. There seems on the contrary a marked determination to have nothing to do with the subject. Again and again comes up the cry from our teachers: "Spare us from History." In consequence, the classes in all our schools are taking the impress, as in nine cases out of ten they will do, of the feelings of those to whom they look for instruction, regarding this branch of the curriculum with something like the sentiments with which an orthodox Christian looks upon Satan—as a necessity to be dealt with as little and

in as summary a manner as possible. Why should this be the case? Looked at from any point of view, history is not of second rate importance. Regarded as a mere exercise in strengthening the memory, if properly taught, it is unsurpassed. If we look at it as an instrument in developing the reasoning powers, in the hand of a skilful master, it is scarcely, if it all, inferior to mathematics. As a moral educator it perhaps stands first on the list of our present school curriculum, while as a means of furnishing the mind with a store of information, useful and applicable at all times and seasons, beyond doubt it is far above other topics. History is a map of the blunders and failures, the triumphs and success, of those who have gone before us, and as such forms the principal guide for ourselves and our children. Why then does this study excite so little interest? In the first place, of one thing we may rest assured: no hope can be entertained of ever improving matters in this respect so long as teachers themselves fail to throw enthusiasm into their work. Without some interest on their part it is vain to expect any from those who listen to them. Can there be nothing done, no suggestion made, by which this defect may be remedied and the subject assume its fitting importance in the school-room and in life? That this is not at present the case it needs only a glance at the answers given by candidates at any of the regular examinations to thoroughly convince us. Perhaps there is just

now a leaning, rather too pronounced on the part of the examiners, to make mathematics the main branch of a common education. This of course directs attention mainly to these, for after all the reputation of a school depends very much on the number of candidates who are successful in passing the examinations—a statement which is true for all grades, from the High School Entrance Examinations up to those of the various universities. But while not at all inclined to underrate the primary importance of mathematics as a mental training, and their practical usefulness to the student in after life, there are some who cannot forget that the main end and aim of all true education is that of making better men and women to assist in shaping the course and moulding the destiny of this Dominion. Such look with regret and almost dismay upon the condition in which some of the other branches, and particularly history, find themselves at the present moment. The necessity for keeping up the standard in mathematics may be urgent enough. Too many pass the Intermediate even now for the good of the teaching profession. But if the stringency were exerted in some of the other departments as well, it may perhaps be fairly hoped no immediate evil would result. Mr. Buchan's paper on English Literature at the recent examination was a step in the right direction, and the result must be an increased attention to this branch during the coming year. The history papers on the Intermediate have been also, on the whole, well calculated to lead to an intelligent study of the subject. The only difficulty seems to be that so much time is at present necessary on the part of the pupil to master the mathematical part of the programme, and so little available for the rest, that it is difficult to arouse any enthusiasm on the part of the student for the

latter. Still, even should there be no change in this respect, it should not appear so difficult a task to arouse more interest in history than the majority of our students now bestow upon it. In venturing to offer a few suggestions on this point I am only influenced by the desire of attracting attention in that direction. It may be reasonably hoped that others will pursue the subject further and improve upon what is here advanced.

In teaching History, then, it would seem that in the first place *the subject should be made attractive*. That is of course the primary condition in all education. The first object is to arrest the attention of the pupil. Interest once excited will carry him on of his own accord. In the main, perhaps, the principal good our schools and colleges can achieve is to teach the student how to learn, to direct his tastes, to determine the bent of his inclinations. If he become a scholar, or an expert in any one branch it must be owing very much to the work he performs after leaving the class room. Nor is it always, nor indeed usually, the first men on the class lists who make the most useful citizens or reach the highest mark in the world. School life, however, generally determines the subject to which attention afterwards is chiefly given; the amount of information gained, and the progress made in any study is to a great extent in proportion to the charm with which that study is invested by the teacher. Hence, to gain the requisite amount of attention history must be made attractive. It may be fairly doubted whether the best way to attain this end is by means of long-winded and idle tales about this and that king or personage with whom the class may be dealing. These, as a rule, contain little real information and take time from things of more importance. A short, pointed anecdote will some-

times fix the attention and rivet a fact. A line from one of the poets in allusion to an event will occasionally make an impression, when constant repetition has proved a failure. Anything which keeps the mind from wandering, if it has the recommendation of being short, must be useful. A free use of the blackboard by the teacher in writing down in order, and keeping before the class, the principal events of a reign is of good service. A method of procedure somewhat as follows has been adopted in some of our schools with good success. Write down the first *principal* event of the reign or period with which you are dealing, using a *Roman* numeral. Then while questioning the class, write beneath it every other event which can be deduced from that first, using in the last instance *Arabic* numerals. Continue this process through the whole lesson. At the conclusion the student has before him a panorama of the whole work. The eye is thus made to assist the memory, and the effect is a two-fold gain. The same result is secured by following a campaign on a map before the class, interspersing the exercise with questions and comments. The latter has likewise the advantage of being a good lesson in Geography. But perhaps one of the best means of exciting an interest in history and giving it a charm is the practice of encouraging scholars to examine the matter and think over the subject for themselves. Above all let the dead monotony of the daily recitation from text-books be removed. Let the pupil compare kings, their acts, and the results which followed their deeds; let them deduce effects from causes; let them read their text-books, not for the mere purpose of loading the memory with dates and facts, but with some definite object in view. For instance encourage them to write a comparison

between Hannibal and Napoleon, between Napoleon and Cromwell, to contrast the Guelphs and the Stuarts, or any other of those men or monarchs whose careers are entertaining or instructive. Still another way of keeping a definite aim in view is to rapidly detail the principal events in a coming lesson, and then prepare a list of questions on these, of which the answers must be furnished by the class. In receiving these answers let as wide a latitude as possible, both of opinion and discussion, prevail. In this way an interest may be roused, the memory may be strengthened, and an impetus given to the development of those powers of thought, the awakening of which is, as before remarked, the true end and aim of all genuine education.

II. *The student should descend from principal to minor events.* The surest way to destroy the memory is to confuse it. The surest way to confuse it is to jumble all things together, by trying to learn everything at once. This is usually the case unless the teacher exercises discretion before the class, unless he points out certain events as of more importance than others, and fixes attention upon them. In passing through an unknown tract a traveller needs landmarks at intervals to guide him. If he has these he will have little difficulty—if he use them intelligently—of making his way in safety. So it is with a student of history. There are certain leading facts upon which the mind can rest in tracing a nation's progress from the first faint dawn to the present hour. In the first place let him master these; they will be an invaluable aid in securing the rest. Take, for instance, the Norman period of British History. The mind instinctively fixes itself upon three or four events—the accession of William and its effects on the laws and language, the loss of the French Provinces under John, Magna

Charta, the founding of the House of Commons. Let these events be taken in detail. Let a clear idea be secured of William, who he was, whence he came, why he came, and the effects of his government. Deal with the second event in the same way, pointing out the effect upon Britain now were she a continental power, and encouraging different views upon the matter. In the same manner let the great charter of our liberties and the great agent of English freedom be dealt with, in every case keeping before the class the fact that these are not dead issues, the interest of which has departed, but matters of real, living importance to everyone at the present moment. Having thus mastered these primary events, it might be well to take the period as a whole, dividing it into separate reigns and dealing with these in the same manner, *i.e.*, investigating causes and results as much as possible. But especially let the lesson be practical. The key note upon which everything should turn should be: "How are we at present affected by those events of the past? What lessons do they convey, what errors should be avoided, what actions are we to applaud? Keep the reason alive as well as the memory. Let the student realize he is poring over no musty, mouldering, useless relics of bygone times, but that he is conning truths meant for his guidance and assistance in threading the same mazy paths these mortals have trod before him. He should feel he is learning something that will conduce to his advantage and pleasure almost as much as the very rudiments learned at the fireside, and on the first forms at school. Once passed through a term's teaching of this kind, there will be little remaining that the student cannot master for himself; and if his enthusiasm has not been aroused he has at least a clear conception of the leading facts of

the subject, and, what is better, the power of applying them. If the pupil remain long enough at school the system can be carried further and further until the most minute details are fully mastered. It may in fact be seriously doubted whether from knowing one or two events of a reign a pupil could not in this way insure a remembrance of all the rest. When any one circumstance of history is presented he instantly has a series of stepping stones by which he descends almost at pleasure to any distance.

III. *The teacher, not text-books, must be the student's guide.* We constantly hear objections made to the use of this or that historical text-book in our schools. It is urged, and at present with some force, that some of these take very partial views, that the feelings of certain classes of the community are not sufficiently consulted, and that it is wrong that home-teaching should be destroyed, and cherished beliefs weakened by such influences at school. As long as the text-book alone is the source of knowledge, and one author merely is used, this objection will be urged, and will be a source of discontent and bitterness. It will be protested by Roman Catholics that Collier's views are those of a bigot; it will be urged by Protestants that Lingard could never with safety be allowed in the hands of our children. In consequence of this mutual feeling of distrust, it is almost impossible to get works, at once suitable and reliable, into use. The only remedy seems to be for the teacher to take the matter into his own hands, and by dispensing as far as possible with books, remove all just ground of complaint. This can be done in the manner already indicated—setting questions for the class, and allowing the scholars to read up the answers, when and where they will. The duty of the teacher, at least in Canada, requires him to be in the school-room a

partisan of no politics, a follower of no religious denomination. There are great truths—moral truths of fundamental importance, upon which all creeds can unite—and more it seems impolitic to endeavour to teach. All are agreed it is wrong to steal, to swear, to lie, or to be treacherous or dishonest. Wherever instances of these occur in history, I presume the teacher is but fulfilling his duty to point out the consequences, and to deduce whatever moral can be drawn. But the chief objection to historical teaching arises not from these, but from opinions advanced upon some point of controverted doctrine, as foreign to the substance of real history as the feathers on the head-dress of a North American Indian are to the necessities of his clothing. But even these themselves in the hands of an intelligent teacher might be made to give zest to the subject rather than to repel the student from it. Various opinions might be cited, and the pupil left to draw his own conclusion. It is necessary in Canada that there should be no bigotry or intolerance. These northern skies, this bracing air was meant to nourish freemen, and conscience should be as far beyond all earthly control, as far above all human power, as those ethereal hea-

vens that bend in everlasting majesty above us. Dwelling as we do here, Catholics and Protestants, Dissenters and Churchmen, all creeds and all nationalities side by side, bound together by a thousand ties, natural, social, political, we can ill afford to consider another man a pariah because he attends a church different from ours, or subscribes to a creed the chief tenets of which we do not hold. No one is fitted to teach history until he has learned enough of it to overcome that delusion. Let us not be like that famous French river which, receiving the waters of a tributary, declines to mingle with its stream, but bears it on clear and distinct by itself. Let us try rather to imitate our noble St. Lawrence which, rising far up amid the snows of the north, gathers in its course waters of every clime and every hue, rolling them, and purifying them, and assimilating them to himself, until increased by their volume and strengthened by their weight he pours in one giant stream to the ocean.

I had purposed in this article advancing a few reasons in support of a more thorough study of Canadian history in our schools, but I fear my allotment of space is already fully taken up, and I must leave this for another.

IN the Normal School of Nova Scotia the theme announced for the Lorne Medal was "Qualifications of a Teacher Not Contained in the Syllabus;" but, before the "original" essays were sent in to the examiners the same topic was given for a class exercise, and the competitors had the benefit of sundry corrections and kind suggestions from the Principal. As prize compositions in the land of Evangeline invariably find their way into country papers, no wonder that the uninitiated public, as well as the examiners, should be delighted with the high standard of excellence *displayed* by this favoured institution! It is said, nevertheless, that one thoughtless and disrespectful student actually observed in his essay that honesty and straightforwardness were essential "qualifications" of a successful teacher.

AT the last meeting of the New England Association of Superintendents, a Committee appointed for the purpose reported the following definitions formulated from answers received from members of the Association:

1. What is Teaching?

Teaching is the process of arousing and directing the mental activities in such a way as will lead to the acquisition of knowledge and to the development and strengthening of the faculties.

2. What is the Word Method in reading?

The Word Method is the presentation of the word as a whole as the representative of a conception.

3. What is Discipline?

Discipline is the systematic application of principles of thought and action to the conduct and training of pupils.

SPORTS IN OUR SCHOOLS.*

BY JOHN HERALD, M.A., HEAD MASTER, HIGH SCHOOL, DUNDAS.

WHEN complaints against our system of education become widespread, are frequently reiterated, and proceed from a source we are compelled to respect, it becomes the duty of teachers in particular to inquire whether they are well founded or the reverse. All of you have no doubt heard, or read in the public prints, that under the present system of instruction the health of many of our young people is being ruined. This complaint does not come from the prejudiced or from the ignorant, but is uttered by the parents of those who have suffered, and is endorsed by leading physicians. Hence it cannot be disregarded. The teacher is entrusted by parents with the care, not alone of the intellectual, but of the physical and moral nature of their children. I am afraid that a great many of us forget this, and thoughtlessly devote all our energies to the cultivation of their intellects. I will not stop to inquire what may be the causes of this neglect of the pupils' physical and moral nature by the teacher, but merely remark in passing that perhaps the fact that a teacher's success is now almost invariably measured by the number of his pupils who "pass" certain written examinations, is one of the causes. I have no doubt, either, that there are many teachers throughout Ontario who are so thoroughly interested in the intellectual progress of their pupils that they become oblivious of all else—the

"pale and leaden eyed" look, the languid but nervous manner, of their scholars. There are, of course, many causes tending to injure the health of children over which the teacher cannot possibly have any control. Of these I shall not speak. There are, however, many which properly fall within his jurisdiction, such as want of cleanliness, defective ventilation, injurious positions at desks and in classes, overwork, and lack of good, health-producing, pleasure-giving sports. To the last of these I intend at present to confine my remarks.

There are, doubtless, some who think that little or no necessity exists for a teacher's encouraging his pupils in out-door sports. They may be right with regard to one class of scholars. When the health of very young children, for example, fails, it may not be for want of exercise. The cause may be sought elsewhere. At the same time I would advise all teachers of such pupils not to allow them to remain in the school-room during the whole of the recess, even though they seem to have no desire for play. They ought to be sent out to be surrounded by and inhale the pure air of heaven for a short time at least, as they move briskly about. But when scholars have reached the age of fourteen or fifteen, and shew a particular aptitude and desire for study, then, I consider, the real danger begins; then the teacher who loves the intellectual part of his work—whose sole delight it is to see the

* A paper read before the Teachers' Association of the County of Wentworth.

young mind gradually developing under his fostering care—is apt to forget that the young student has a physical frame as well as a mind to be matured, and that if undue attention be paid to the one, to the neglect of the other, both may be ruined. A strong mind in a weak body is a rare occurrence. When the body becomes weak the mind as a rule suffers with it. Health of body and soundness of mind generally go together. How careful, therefore, ought the teacher to be that he does not allow his zeal for intellectual culture to make him forgetful of his pupil's physical condition. The physical health, then, of his pupils ought to be an object of especial care to the teacher who desires to see them succeed in their studies. Exercise is the best tonic for both body and mind. If any part of the brain is allowed to lie idle it becomes weak; if it be kept in exercise it becomes strong.

We now come to ask what kind of exercise should be recommended to students? First, let me enter my protest against an opinion commonly held by parents, that their children can get plenty of exercise at home in doing work about the house or in the garden. Of course I do not mean to say that because a child is attending school he should be exempt from those duties which a parent has a right to expect him to perform at home. Far from it. But what I do mean to say is that the work referred to does not afford the exercise most needed by a young person of a studious disposition. Let him attend to these duties by all means, but let him have something more. Let him have exercise that will not only divert his mind from the work of the school-room, but will produce a pleasant excitement and thereby afford pleasure. These accompaniments I would particularly insist upon. When a diligent pupil leaves the school for the day he is weary.

The exhaustion of the mind produces lassitude in the body. He requires something to rouse the one and invigorate the other. Mere routine work around the home will not do this. Besides being monotonous it lacks interest to him. Something is needed that will not only divert and stir the courses of his blood, but cheer his spirits, and make him forget his studies for the time. Let him enter heartily into some social game, a game in which the players are divided into sides, each bent on victory. The mind is thus fixed upon an object of ambition totally different from that after which he strives at school, and thus the mind is led completely away from serious thoughts, becomes relaxed, invigorated, and thus fitted for the renewal of the intellectual struggle. Students' sports then should be outdoor, innocent, exciting, pleasure-giving, and capable of diverting the mind from the more serious work of the school. The beneficial effects of outdoor sports upon the physical health of the pupils, and the reflex action of that health upon the mind are not alone to be considered. Young people almost invariably love pleasure, and their pleasantest remembrances are always associated with whatever is the source of that pleasure, whether schoolfellow or school. Hence that institution at which the pupils are compelled to go through endless intellectual drill day after day will not engage the minds and affections of the pupils so effectually as the one in which the work of the school is intermingled with healthful play, which affords a pleasure totally distinct from that which a studious boy or girl finds in study. All teachers will at once agree with me that it is desirable that pupils should love the school they may be attending. This love may be generated by love for study, or by love for the teacher; but it may also be created by love for out-door school

sports. Let us suppose a case. A boy full of animal life and spirits, who has been accustomed to plenty of healthful exercise, comes to a school at which the pupils are not encouraged to indulge in athletic sports, but have their time and attention wholly taken up with their studies. What is the result? He becomes disgusted with the school—thinks it is a tiresome institution—regards it somewhat in the light of a prison-house. His disgust for the school passes by an easy and natural transition into a disgust for everything associated with it, whether studies or teachers. His mental training becomes almost a hopeless task. Suppose, however, this boy had been sent to a school the pupils of which, after the day's work was done, regularly played cricket, base-ball, foot-ball, lacrosse, or some other equally enjoyable game. Now, on account of the pleasant associations, there is gradually developed in this boy a love for the school and all its belongings at which the old motto, "All work and no play" has been entirely discarded and replaced by "Work first and then play."

What are the effects of out-door sports upon the character? Generally speaking, I believe they are beneficial. A self-reliant manliness is the natural outcome of such games as those to which I have already referred. Each player desires the victory of his own side. In order to this it is necessary that he exert himself to the best of his powers, that he does not allow an opponent, although physically stronger than himself, to gain an advantage without a struggle. In such games it frequently happens that there arises a crisis when a lad feels that the whole honour of his side depends upon his individual exertion. He nerves himself for the effort and faces the difficulty with a determination strongly characteristic of the Briton, and which has led him in all quarters of the

world to victory, conquest and fame. Here I may remark that in no country in modern times are athletic sports so universally practised and held in such high esteem as in Britain. I will not affirm that the indomitable perseverance and "pluck" of the Briton are to be attributed solely to the influence of athletic sports, but I will say that such sports have been very potent factors in developing these phases of the British character. Besides tending to make our lads self-reliant, manly and bold, I believe that out-door sports tend to develop the generous side of a boy's nature. As he desires the victory, so he desires to win it honourably. A victory won from an opponent who was labouring under a disadvantage would, to the average schoolboy, be productive of but little pleasure. That his laurels may be an honour to himself he will be careful that he takes no unfair advantage of his rival. When there is a manifest inequality in the sides, as frequently happens, I know from my own experience that a proposal for an equalization will, in ninety-nine cases out of a hundred, come from the captain of the stronger side. Frequently it happens that there is great disparity in the ages and physical strength of the pupils attending the same school. Usually the older and stronger will treat the younger and weaker with considerate tenderness, which they would not shew to their equals. A big, strong lad will, as a rule, consider a small, weak one as a special object of his protection and patronage. There are, no doubt, many bullies; but they are not respected even by those boys who need not, and do not fear them. The general bent of schoolboys' minds is opposed to oppression and inclined to generosity. Out-door sports give many opportunities of shewing this. Hence these sports should be encouraged. Again in such games as are usually played

by schoolboys each side has a leader or captain. If the game is to be successfully carried on every player feels he must obey implicitly the directions of his leader. A boy may have an opinion which differs widely from his captain's as to the disposition of the "men" on the field, or as to the particular method to be adopted in the play, but he soon learns that to make the game a winning one the captain's words must be law. Thus we see that these games exert a very powerful influence in teaching boys discipline, and in shewing them the advantage and necessity of having a recognized head whose will should be supreme. This lesson, although learned on the play-ground, becomes invaluable in the school-room and in after life. Moderation and self-control are also developed by participation in these games. A boy cannot always be victorious, nor always on the losing side. When he begins to take part in these manly sports he is very liable to lose his temper, to be unduly elated by victory and too much dejected by defeat. As time goes on he finds that it is more discreet not to get angry, and wiser not to shew too much joy at success, nor dissatisfaction at defeat. He knows not but that the very next game may reverse the relative positions of the sides, and so he wisely moderates any display of feeling and inwardly enjoys the game if he wins, and does not give his opponents the chance of exulting over him if he loses. The play-ground is the miniature of after-life. A lad who has learned the important and necessary lessons of moderation and self-control while at school will be better prepared to face the struggles of life than one who has not thus been trained for the battle. I have named a few of the advantageous influences which these sports exert on the character. That they are always attained it would be rash to assert; but that

they sometimes follow is a sufficient reason for the encouragement of every healthful game.

This leads me to a question of great importance to teachers. To what extent should they encourage these sports? Should they take part in the games themselves, or be content with giving their advice to participate in them? I say decidedly the teacher should take part in the games. Let his encouragement be not merely by words, but by example. The strongest objections that I have ever heard urged against this course are that it tends to lower the teacher's influence with his pupils, to lessen their respect for him, and to encourage undue familiarity. Were these well founded I would most unhesitatingly say that a teacher should not take part in any games with his pupils. But, as a matter of fact, do we find that such is the case? Most emphatically, no. On the contrary, the pupils respect their teacher more,—they feel that he is making a sacrifice for their good,—they become grateful to him, and this naturally begets affection. He then becomes divested of that grim character which, unfortunately, is too often ascribed to him by his pupils. He is now no longer regarded as a hard, unsympathetic taskmaster, but as one who has a good deal of fellow-feeling with his scholars. And as "Fellow-feeling makes us wondrous kind," they not only take no delight in trying to annoy him, but on the contrary strive in many ways to please him. They know that one of the surest ways to do this is to manifest an interest in their studies. That such is the natural result of a teacher's participating in out-door sports with his pupils I not only believe but know, from cases that are within my own experience, to be a fact. Such being the case, there can be no difference of opinion as to whether a teacher should, when possible, take

part in the sports of his pupils or not. Those pupils who most need physical exercise are the least likely to take part in the school games. The strong and healthy require but little incentive to join in a game of cricket or lacrosse. It is the physically weak who most generally abstain from all those sports in which the healthier and stronger boys delight. This, perhaps, is because they feel that they are not capable of holding their own against the more favoured sons of nature, and because they are afraid of being rather roughly jostled in a promiscuous crowd. Such pupils, I fancy, would not have the same fears if the teacher were on the field and actively engaged in the sport. His presence and example would prove a most wholesome stimulant to them, and they would soon be as eager as any to share in the sport. The exercise, if not too violent at first, soon shews its effects upon them. A greater vivacity of manner—more colour in the face—a more cheerful look—soon indicate that the exercise has not been wasted, and thus a lad who gave promise of being a sickly man, or of filling an early grave, is endowed with vigorous health. Many parents, particularly the parents of physically weak children, are greatly afraid that their children may indulge in too violent exercise, and thus break down their already weak constitutions. There is danger of this certainly, and it ought to be carefully guarded against. But such parents would have some assurance that their children would not be so apt to run into this fatal extreme if their teachers were present to oversee and participate in their sports. A judicious teacher could easily prevent excessive exertion without making it apparent that the pupils were the objects of his supervision while at their play. Were this done, one of the great evils of school sports would be prevented, and

they would be made more effectually to perform their legitimate function—the development of the child's physical nature. That many school-boys are not very choice in their language while at play is a well-known fact. The habit of swearing and using foul language, as every teacher knows, is one which it is almost impossible to eradicate. Most of us have no idea of its extent. It induces many parents to object to their children mixing promiscuously with their fellow pupils. Some even go so far as to take their children away from our public schools, and send them to a private institution to be more under the direct care of the teacher and free from the danger of becoming corrupted in their language and their thoughts. Now anyone who takes an interest in the matter will find that this evil habit most prevails where the boys are under no restraining influence while at play, and that it prevails least where the teacher takes part with his pupils in their sports. I know of a school at which the lads were left to themselves on the play-ground, and at which swearing had become very prevalent. A new teacher was appointed. He joined his pupils on the play-ground, and swearing gradually disappeared. If it is true, then, that a teacher's presence on the play-ground tends to check and finally to abolish this corrupting custom, surely parents will be pleased to have the teachers of their sons taking part with them in their sports, and those parents who are afraid of their boys becoming demoralized at school will thus have the grounds for their fear to a great extent removed.

I have now endeavoured to point out some of the beneficial effects of out-door sports upon the health, mind, and character of the young. So far it will be noticed that I have drawn my illustrations from those games that are usually played by boys. I would

not, however, have you infer that I entirely ignore the influence which out-door sports exert on the health, mind, and character of girls. Far from it. I have chiefly referred to the sports of boys because with them I am most familiar, and would willingly leave to some of our female teachers the consideration of girls' sports, knowing full well that by them the subject would be much better

treated than by me. Let me, however, remark that many, if not all, of the advantages which flow from boys indulging in out-door sports under the active supervision of their teachers, will also accrue to girls. Their bodies will be strengthened, their minds invigorated, and a love for their teachers, their schools, and their school-work engendered.

GYMNASTICS OF THE BRAIN.*

BY J. A. GRANT, M.D., M.R.C.P. (LOND.), OTTAWA.

IN presenting this subject for the consideration of the Association, I feel satisfied that no more important topic could occupy the attention of medical science than that which closely concerns the welfare of society, and promotes, in the most comprehensive sense, the "*mens sana in corpore sano*." Mental hygiene and physical hygiene are inseparably connected, and a few observations at present may not be out of place in regard to the essential balance of mind and body, and the application of a few ordinary principles to the present system of education. The physical well-being of the pupils in our schools should be as carefully guarded as the acquirement of knowledge. Year after year our educational system is becoming more complicated, and even the so-called common school course is quite academic in character and more than an ordinary test of strength to the young brains, in their plastic state, budding forth to the supposed stage of practical usefulness. While acknowledging the rapid in-

crease in the required subjects of study, branch after branch being yearly added, we must not overlook the very tree of life, and the processes requiring such close attention to obviate the inroads of disease which soon saps vitality and ruins the prospects of the brightest specimens of intellect in the incipient stage of development. The mental and physical well-being of the pupils should advance equally, otherwise growth in either case will become, in a measure, one-sided. While approaching this subject I am fully aware that it is dangerous ground; still, as a matter of public duty, it may not be out of place to advert briefly to a few points respecting which it is important that all classes of the community should alike have full information. The point to which I first wish to direct attention is "the brain of youth." The problem, and one of the most difficult and trying of the age in which we live, is, how to build the best brains out of the materials placed at our disposal. Education or educated evolution certainly has much to do with the development of mental power. The building of a brain is

*A paper read before the Canadian Medical Association at Ottawa, on the 2nd of September.

a social problem of more than ordinary interest to every family circle. Mothers particularly have to do with it, and teachers are desirous of drawing out innate power in its various forms, just as varied and peculiar as the phases of the human countenance. The brain, the chief part of the nervous system, must be built up in keeping with the development of the whole body, the one depending greatly on the other, in order to arrive at the greatest degree of power and perfection, either as to organization of structure or performance of function. Dr. Maudsley, in his Gulstonian lectures for 1870, says:—"The time has come when the immediate business which lies before anyone who would advance our knowledge of mind unquestionably is a clear and searching scrutiny of the bodily conditions, of its manifestations in health and disease; he must recognize how entirely the integrity of the mental functions depends on the bodily organization, in fact, must acknowledge the unity of mind and body. The brain, the seat of the mind, possesses a mechanism peculiar in itself, and a power diversified in character, presenting various phases and peculiarities throughout the highest order of intellectual development in the *genus homo*. In the crude and almost rudimentary state of cerebral pulp—soft, pliant and undecided in cerebral type, as to inherent mental power or capacity, more than ordinary care must be observed in suddenly straining the structure nature has put in the cranial cavity. The drawing out process embraced in the true education must be conducted with care, caution, and more than ordinary guidance and observation. It is here that mental hygiene operates, embracing as it does all that relates to development, exercise and the maintenance of mental activity—in fact education, in the most comprehensive sense. The brain may be con-

sidered a central telegraphic office, constantly distributing messages to every part of the system; and in order to attain success in the working of the complicated nervous machinery, it is absolutely necessary to know something of the physiological principles involved in the promotion of a single thought or idea. It is a well known fact that the growth, training and employment of the young aid in the building up of a brain. On this basis Dr. Brown-Sequard proposed the systematic training of the left hand in children, in order to develop the right side power of the brain equal to the left. In fact it is necessary for the building of a powerful brain that all the bodily organs should take their part. Brain labour or exercise in the work of the school, now termed cerebration, is the problem which to-day is occupying the attention of close observers in the path of intellectual development. Taking into consideration the pliant character of young brain tissue in the very midst of the formative process of thought and ideality, the degree of exercise to the point of mental strain must be guarded most carefully and patiently. As the normal performance of a function strengthens and develops the organ itself, so the brain becomes similarly influenced. Here student life comes in, with its advantages and disadvantages, and in order to attain the highest degree of intellectual development, reason, rather than cramming, is likely to bring about the desired object. While brain tissue is in the elementary stage, let elementary education be the pabulum of thought. As Huxley has remarked, "freshness and vigour of youth must be maintained in mind as well as body." The more closely we examine the subject of mental hygiene the more closely it partakes of the common-sense inquiry how best to educate and train to achieve the greatest degree of culture, embracing all the

interests of man in his varied relations of life. To accomplish these desired results an important question arises: At what age should children be admitted to school? In the consideration of this point the peculiarities of brain structure require at least a passing notice. Fat, phosphorus and water are important factors in the development of brain power. In the infant the chief mass of the brain is soft and uniform, with smooth ventricles and few convolutions. In the adult we find much better defined brain substance, with elaborate ventricles and more numerous convolutions, less regular in character. In the infant the peripheric nerves are larger in proportion than the nervous centres, excepting the sympathetic ganglia. The head of the new born infant is one-fourth the length of the body and one-fifth the weight, and all the parts of the body have their most rapid growth within the first three years of life. Between the fifth and sixth years the base of the brain grows rapidly. The interior of the brain at this age also gives evidence of rapid growth. The receptive faculties here obtain power, and at this stage the foundation of education should be commenced slowly, gradually and cautiously, great care being bestowed to become acquainted with the innate peculiarities of the childish brain, while being stamped with the first thoughtful impressions. From all the information on this subject, the seventh year is considered as the period for the commencement of regular mental work, not however to strain the brain, but rather to bring about regular and gradual training of this intricate structure, having so many functions, and taking so very important a part in the growth of the body. The brain is said to digest more than even the stomach, in a sense, and certainly it governs largely the digestive process, and on that account how

careful the teacher must be, in observing the growth and vigour of youth, so necessary in the formative process of thought, the bases of the common-sense principles of education. It is a well known fact that children sent to school too young are more liable to the various diseases of childhood. Irregular temperature, defective muscular exercise, and tight lacing, are powerful factors in the development of disease. Improper position, inclining to one side or the other while studying at the ordinary desk, frequently results in spinal deformity. How often is it the case that children failing in health, when subjected to a skilled examination, are found to have a high shoulder and a curved spine, all of which had been permitted to pass unnoticed until advanced and seated as structural disease. During school life, the points for close examination are numerous, and too great care cannot be taken in guiding the tiny structures of those frames, which afford such comfort in the home circle, and in time take their part in the intellectual development of national power and future greatness. To correct such difficulties and strengthen such sets of muscles as give evidence of failing power, McLaren, of Oxford, has established a gymnasium, upon entering which a close and careful examination is made and a systematic method of training is adopted, sufficient to meet the growing requirements of the system. Glasgow University has also its gymnasium, and, although attendance thereat is not compulsory, its necessity is daily attracting closer observation. The gymnastics of brain and body should not conflict with each other, and in the growth and development of power the results to be achieved will certainly be greater than by cramming, under a system of hot-house vegetation, through which both physical and intellectual vigour become warped, and practical

usefulness for the varied spheres of life considerably lessened. Hospital statistics point out that the principal mortality in children is passed between the seventh and eighth year, which strengthens the argument very considerably, as to the best time to enter school. Parents should not be anxious to convert schools into nurseries, and this point, I feel assured, has not escaped the attention of those under whose immediate supervision the whole subject of school life is placed in our Dominion. To the ordinary observer it must be apparent that the period between childhood and boyhood is one surrounded by constant anxiety, and requiring more than ordinary care and watchfulness. For children under seven years of age the great proportion of the teaching should be imparted or conveyed as play; not as a play upon words, but a play in the development process of germinal intellectual power. It is in these years of childhood that education should not in any way conflict with health. Short hours of study; vigorous digestion, kept up by ample physical exercise; will assuredly bring about better results than the overstimulation of young people by competitive examinations, which induce a degree of mental high pressure, that may make bright pupils in childhood, but oftentimes sap the requisite physical power for the varied callings of after-life. Those who require to live by muscular power chiefly must develop the power early. In the cultivation of brain power direction should, as soon as possible, be given to the practical usefulness of the future. Thus preserved, child power, in time, becomes good man power, and in the march of intellectual progress affords strength and endurance to the future of our Dominion. In an address before the State Medical Society of New York, Dr. Agnew draws attention to the increasing pre-

valence of asthenopic, refractive, and neurotic difficulties among scholars at the present day. These diseases, he considers, are growing rapidly in schools, colleges, and other centres of civilization. In both England and Germany we have ample evidence of the same. The question arises how are such diseases to be most judiciously guarded against? By careful scientific inspection, and the rigid enforcement of personal and local sanitation. Defective school architecture has much to do with bringing about defects of vision, through unequal expansion and contraction of the pupil. Hence the importance of the proper adjustment of light in the school-room. To correct such difficulties, we are fortunate in having a city medical inspector, and the importance of such inspection cannot be over-estimated in carrying out efficiently the best working of our educational institutions. Dr. Cohn, of Breslau, examined the eyes of 10,000 school children, and found that in various degrees there was a rapidly increasing near-sightedness, and in some of the highest classes the near-sighted students were nearly sixty per cent. of the scholars. From these facts it is quite evident medical men have an important duty to perform outside of the privilege of curing disease, if possible, once it has been developed. Thus we observe the absolute necessity of proper sanitary inspection, to stay the evils now on the increase, chiefly through an overtaxation of nerve tissue and nerve power, not in keeping with the physiological principles inculcated at the present day. From various data, it is quite evident, that within the past few years lung diseases are on the increase in school children, and, in many instances, this may be attributed to overcrowding and long and exhausting confinement in a vitiated atmosphere. The lofty ceilings of our new school

houses are evidence of progress, but proper ventilation must be carried to such ceilings, otherwise they will become receptacles for foul air, to vitiate the entire atmosphere of the room. Fresh air is about the most important food of the system, and at no time more than during school life should there be a proper and well-regulated supply. It is a well-known fact that every individual poisons fifteen cubic feet of air every hour, in consequence of which thirty cubic feet should be supplied every hour. If we desire to stay the progress of epidemic diseases, there should be every effort made to limit the number of pupils to the area of class-room accommodation. Well might Dr. Thomas Rochester remark, at the Medical Society meeting at New York in June, 1876, that "Education was not in all instances the unmistakable blessing which it seemed to be, for it became necessary to acquire it at too great a risk," and, under such circumstances he recommended that every school district should have a competent and well-paid medical director, who should devote himself thoroughly and conscientiously to the many hygienic duties of the position. It is impossible to over-estimate the importance of this sub-

ject which at present is engaging the attention of public men in every country. Dr. Bowditch in his address at the International Medical Congress, Philadelphia, 1876, stated that over 200,000 persons are annually slaughtered in the United States by preventable diseases. What the death rate in the school children of the Dominion may be, or of the Province of Ontario, now numbering 496,000, between the ages of five and sixteen years, I could not offer an estimate. From personal observation, I fear that the cramming system of the present day is not likely to produce a generation equal to the one now passing away. The most useless individuals in society are those who know everything and can do nothing. Our country is rapidly developing and we require workers; workers not converted into drones by excessive, ill-directed application in the buoyant period of youth. Let our education be directed towards the object in view, governed by the principles of common sense, and the outcome will be more lasting, the results more practical. The rising generation will then be one better able to grapple with the varied emergencies of certainly a trying age.

In a capital article by Prof. Goodenough in the *Ohio Educational Monthly*, we read, "It will be seen that Industrial Drawing is the principal factor in a large number of industries, and hardly one can be named that does not depend more or less on it. In our Public Schools it is almost the only subject at present that leads pupils to think of industrial pursuits.

THE true education is to unfold and direct aright our whole nature. Its office is to call forth power of every kind—power of thought, affection, will, and outward action; power to observe, to reason, to judge, to contrive;

power to adopt good ends firmly, and to pursue them efficiently; power to govern ourselves, and to influence others; power to gain and to spread happiness. Reading is but an instrument; education is to teach its best use. The intellect was created not to receive passively a few words, dates, facts, but to be active for the acquisition of truth. Accordingly, education should labour to inspire a profound love of truth, and to teach the processes of investigation.—*Channing*.

SPEAKING of singular and plural verbs, which is the correct form in the following 7 and 4 are 12, or, 7 and 4 is 12?

IPHIGENIA AT AULIS.

(Translated from Euripides.)

BY GEO. MURRAY, M.A., ASSIST.-RECTOR, HIGH SCHOOL, MONTREAL.

"The speech of Iphigenia is remarkable for its pathos; and we seem to feel now at least that we are certainly reading the very words of Euripides, free from any interpolations."—Paley's *Euripides*, vol. III., p. 443.

HAD I the voice of Orpheus, O my Sire,
 And could I charm the stones to follow me,
 Beguiling hearers sweetly to my will,
 Words I would use—but now my only spell
 Lies in my tears, for tears are all I have!
 I hold no suppliant bough, but touch thy knees
 With this frail body which *she* bore for thee:
 I pray thee, slay me not before my time,
 For sweet it is to look upon the light,*
 But thou wouldst thrust me down to nether gloom.
 I was the first to call thee Father: thou
 Didst call me first thy child, and I did cling
 First to thy knees, and shower upon thy lips
 Sweet, loving kisses which thy lips returned.
 And thou wouldst say: "My darling, shall I live
 To see thee blooming in some Chieftain's halls
 A joyous bride, an honour to thy sire?"
 And I would answer, toying with thy beard,
 Which now my hand doth fondly still-caress:
 "My Father, shall it be, when thou art old,
 That I shall cherish thee within my home,
 Repaying thus the nurture of my youth?"
 I do remember me of all these words,
 But thou, forgetting them, doth seek my death.
 Spare me, I pray, by Pelops, by thy sire,
 And by my mother, too, who at my birth
 Felt pangs less keen than those my death will cause.
 What part or lot have I in Helen's loves,
 Or why should Paris ruin also me?
 Look on me, Father! grant one look, one kiss,
 That, if I fail to move thee by my words,
 I may, in death, at least remember these.
 My brother! weak, I fear me, is thine aid—
 Still, weep with me, with me beseech our sire
 To spare thy sister—there may be a sense
 Of sorrow even in an infant's mind.
 Behold, how silently he prays to thee,
 My Father—pity me and spare my life.
 Two beings dear to thee are at thy feet,
 He, still a nursling—I, a maiden grown.
 One last, brief plea I urge—'tis very sweet
 To live, and look upon the light; but death
 Is darkness—they are mad who pray to die:†
 Life is more precious than the noblest death!

* Cf. *Ecclesiastes* xi. 7: "Truly the light is sweet, and a pleasant thing it is for the eyes to behold the sun."

† "Whatever crazy sorrow saith,
 No life that breathes with human breath
 Has ever truly long'd for death."—Tennyson's *Two Voices*.

ARTS DEPARTMENT.

ARCHIBALD MACMURCHY, M.A., MATHEMATICAL EDITOR, C. E. M.

Our correspondents will please bear in mind, that the arranging of the matter for the printer is greatly facilitated when they kindly write out their contributions, intended for insertion, on one side of the paper ONLY, or so that each distinct answer or subject may admit of an easy separation from other matter without the necessity of having it re-written.

CAMBRIDGE UNIVERSITY EXAMINATION PAPERS, 1880.

MATHEMATICAL TRIPOS.

1. Convert $\frac{1}{2}, \frac{1}{3}, \dots, \frac{1}{n}$ into circulating decimals, explaining any methods for deriving one case from another and for shortening the work.

2. Resolve into its component factors

$$(a^3 + b^3 + c^3)xyz \\ + (b^2c + c^2a + a^2b)(y^2z + z^2x + x^2y) \\ + (bc^2 + ca^2 + ab^2)(yz^2 + zx^2 + xy^2) \\ + (x^3 + y^3 + z^3)abc + 3abxyz.$$

Shew also that if $x + y + z + w = 0$, then

$$wx(w+x)^2 + yz(w-x)^2 + wy(w+y)^2 \\ + xz(w-y)^2 + wz(w+z)^2 + xy(w-z)^2 \\ + 4xyzw = 0.$$

3. Solve the equations:

$$(i.) \frac{3x-2}{5} - \frac{1}{3}(x-\frac{1}{3}) = \frac{2x}{51},$$

$$(ii.) x^3 + y^3 = b^3, \quad xy + a(x+y) = ab,$$

$$(iii.) x + y + z = x^2 + y^2 + z^2 \\ = \frac{1}{2}(x^3 + y^3 + z^3) = 3.$$

4. Shew how to insert any number of geometrical means between two given numbers.

An A.P., a G.P. and an H.P. have a and b for their first two terms: shew that the $(n+2)^{\text{th}}$ terms will be in G.P. if

$$\frac{b^{2n+2} - a^{2n+2}}{ba(b^{2n} - a^{2n})} = \frac{n+1}{n}.$$

5. Define a logarithm.

Prove that the logarithm of the product or quotient of two quantities is the sum or difference of their logarithms.

$$\text{If } x_3 = \log_{x_1} x_2, \quad x_4 = \log_{x_2} x_3, \dots, \\ x_n = \log_{x_{n-2}} x_{n-1}, \quad x_1 = \log_{x_{n-1}} x_n, \\ x_2 = \log_{x_n} x_1,$$

then $x_1 x_2 \dots x_n = 1$.

6. Find the number of Permutations of n things taken r together.

There are n points in a plane, no three of which lie in a straight-line. Find how many closed r -sided figures can be formed by joining the points by straight lines.

vii. Define the unit of circular measure. Assuming that it is constant for all circles, shew that the circumferences of circles vary as their radii.

If an arc of ten feet on a circle of eight feet diameter subtend at the centre an angle $143^\circ. 14'. 22''$, find the value of π to four decimal places.

viii. Prove geometrically that

$$(1) \cos(A-B) = \cos A \cos B + \sin A \sin B,$$

$$(2) \sin A + \sin B = 2 \sin \frac{1}{2}(A+B) \cos \frac{1}{2}(A-B),$$

$$(3) \tan(45^\circ + A) - \tan(45^\circ - A) = 2 \tan 2A.$$

Simplify

$$\sin a \sin \beta \{ \operatorname{cosec} a \operatorname{cosec} (a+\beta) \\ + \operatorname{cosec} (a+\beta) \operatorname{cosec} (a+2\beta) \\ + \operatorname{cosec} (a+2\beta) \operatorname{cosec} (a+3\beta) \}.$$

ix. Shew that

$$\sin \frac{1}{2}A + \cos \frac{1}{2}A = \pm \sqrt{1 + \sin A},$$

$$\text{and } \sin \frac{1}{2}A - \cos \frac{1}{2}A = \pm \sqrt{1 - \sin A}.$$

Hence assuming that $\sin A$ is given, prove that one of the corresponding values of $\tan \frac{1}{2}A$

$$\text{is } \frac{1 - \cos A}{\sin A}. \text{ Are we entitled to assume from}$$

this result that in general $\tan \frac{1}{2}A = \frac{1 - \cos A}{\sin A}$?

If not, why not?

x. Establish the identity

$$\tan \frac{x+y}{2} \tan \frac{x-y}{2} = \frac{\operatorname{cosec} 2x \operatorname{cosec} y - \operatorname{cosec} 2y \operatorname{cosec} x}{\operatorname{cosec} 2x \operatorname{cosec} y + \operatorname{cosec} 2y \operatorname{cosec} x}.$$

Shew that if $\cot \frac{1}{2}a + \cot \frac{1}{2}\beta = 2 \cot \theta$, then

$$\{1 - 2 \sec \theta \cos (a - \theta) + \sec^2 \theta\} \\ \{1 - 2 \sec \theta \cos (\beta - \theta) + \sec^2 \theta\} = \tan^4 \theta.$$

xi. In a triangle ABC , prove that with the usual notation

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c},$$

$$\text{and } a^2 = b^2 + c^2 - 2bc \cos A.$$

Shew also that

$$a^2 \cos 2(B - C) = b^2 \cos 2B + c^2 \cos 2C \\ + 2bc \cos (B - C).$$

xii. Find expressions for the radii of the inscribed and circumscribed circles of a triangle ABC , and shew that the ratio of the former to the latter is

$$4 \sin \frac{A}{2} \sin \frac{B}{2} \sin \frac{C}{2}.$$

If D, E, F are the points of contact of the inscribed circle with the sides BC, CA, AB respectively, shew that if the squares of AD, BE, CF are in arithmetical progression, then the sides of the triangle are in harmonical progression.

PROBLEM.

Let ABC be an equilateral triangle and O any point within it, let the perpendiculars OD, OE, OF be drawn; it is required to find the position of O and the length of a ladder that will reach from O to A, B or C .

PROF. EDGAR FRISBY, M.A.,
Nav. Obser., Washington.

SOLUTIONS

Of problems for the "All the years," University of Toronto, 1880, by Angus Mac-Murphy.

2. If an exterior angle of a triangle be bisected by a straight line which likewise

cuts the base; the rectangle, contained by the sides of the triangle, together with the square on the line bisecting the angle is equal to the rectangle contained by the segments of the base.

Let ABC be the triangle, let the line bisecting the exterior angle meet BC produced in D , about ABC describe a circle, let DA produced meet this circle in E . From similar triangles $EAC, BAD, EA.AD = BA.AC$,

$$\therefore EA.AD + AD^2 = BA.AC + AD^2 \\ ED.DA = BD.DC = BA.AC + AD^2.$$

3. If x, y, z be the perpendiculars from the angles of a triangle on the opposite sides, and if

$$\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = \frac{2}{\sigma},$$

prove that

$$4 \sqrt{\frac{1}{\sigma} \left(\frac{1}{\sigma} - \frac{1}{x} \right) \left(\frac{1}{\sigma} - \frac{1}{y} \right) \left(\frac{1}{\sigma} - \frac{1}{z} \right)} = \\ \frac{I}{\text{area of triangle}} \\ ax = by = cz = 2S, \\ \therefore \frac{2}{\sigma} = \frac{S}{S}.$$

Substitute, and

$$\sqrt{\frac{s(s-a)(s-b)(s-c)}{S^4}} = \frac{1}{S}.$$

IV. Prove that every power of the sum of two squares may be divided into two parts, each of which is the square of an integer.

Let

$$(a + x\sqrt{-1})^n = a_0 + a_1\sqrt{-1} + a_2 + a_3\sqrt{-1} + \dots \\ (a - x\sqrt{-1})^n = a_0 - a_1\sqrt{-1} + a_2 - a_3\sqrt{-1} + \dots \\ \therefore (a_0 - a_2 + a_4 - \dots)^2 + (a_1 - a_3 + a_5 - \dots)^2 \\ = (a^2 + x^2)^n.$$

V. Find the sum of the series

$$\frac{4}{1 \cdot 5} + \frac{9}{5 \cdot 14} + \frac{16}{14 \cdot 30} + \frac{25}{30 \cdot 55} + \dots \text{ to } n \text{ terms,}$$

the last factor in the denominator being the sum of the other factor and the numerator.

$$\text{Let } S = \frac{2^2}{1^2(1^2+2^2)} + \frac{3^2}{(1^2+2^2)(1^2+2^2+3^2)} \\ + \dots + \frac{(n+1)^2}{\sum n^2 \cdot \sum n+1^2}.$$

$$\text{Let } S_1 = \frac{1}{1^2} + \dots + \frac{1}{\sum n+1^2}.$$

$$\therefore S_1 - \frac{1}{1^2} = \frac{1}{(1^2+2^2)} + \dots + \frac{1}{\sum n^2},$$

from the last two equations by subtraction we

$$\text{have } S = 1 - \frac{6}{(n+1)(n+2)(2n+3)}.$$

VI. If n be prime, prove that any number in the scale whose radix is $2n$ ends in the same digit as its n^{th} power.

Last digit in number need only be considered; let it be r ,

$r^{n-1} - 1$ is a multiple of n (Fermat).

$\therefore$ so is $r^n - r$.

Now if r be odd $r^{n-1} - 1$ is even, $\therefore r^n - r$ is a multiple of $2n$; if r be even, $r^n - r$ is even. Thus r^n is a multiple of $2n + r$,

$\therefore$ power ends in r .

VII. If

$$\frac{pr}{r} \text{ be the } r^{\text{th}} \text{ convergent to } \frac{\sqrt{5}+1}{2}$$

prove that

$$p_2 + p_4 + \dots + p_{2n-1} = p_{2n} - p_1,$$

$$q_2 + q_4 + \dots + q_{2n-1} = q_{2n} - q_1.$$

By Law of Formation—

$$p_{2n} = p_{2n-1} + p_{2n-2}$$

$$p_{2n-2} = p_{2n-3} + p_{2n-4}$$

$$\&c. = \&c.$$

$$p_4 = p_3 + p_2.$$

Cancel and add; treat second part in same way.

VIII. See Todhunter's Larger Algebra, Art. 499.

IX. If $\phi(r) = |n$

$$\left\{ \frac{1}{|r|n-r} + \frac{1}{|r-1|n-r+1} \cdot r \right. \\ \left. + \frac{1}{|r-2|n-r+2} \frac{(r-1)(r-2)}{1^2} + \dots \right\}$$

prove that

$$2[\phi(0) + \phi(1) + \dots + \phi(n-1)] + \phi(n) = 3^n.$$

Question should read

Prove that $\phi(0) + \phi(1) + \dots + \phi(n) = 3^n$.

We have $\phi(r)$ equals coefficient of x^r in

$$\frac{n(n-1)\dots(n-r+1)}{|r|} x^r (1+x)^{r+1} \\ + \frac{n(n-1)\dots(n-r+2)}{|r-1|} x^{r-1} (1+x)^r + \dots$$

i.e., in $(1+x)\{1+x(1+x)\}^n$. Find sum of coefficients in this by putting $x=1$.

X. Eliminate x, y, z from the simultaneous equations

$$\begin{cases} \frac{a}{x} = \frac{1}{y} + \frac{1}{z} \\ \frac{\beta}{y} = \frac{1}{z} + \frac{1}{x} \\ \frac{\gamma}{z} = \frac{1}{x} + \frac{1}{y} \end{cases}$$

Why are these three equations sufficient for the elimination of the three unknowns? The above may be solved as under.

$$\begin{vmatrix} -a, & 1, & 1 \\ 1, & -\beta, & 1 \\ 1, & 1, & -\gamma \end{vmatrix} = 0.$$

11. If $A+B+C=\frac{\pi}{2}$, shew that

$$(1) \cot A + \cot B + \cot C = \cot A \cot B \cot C.$$

$$(2) \tan A + \tan B + \tan C = \tan A \tan B \tan C \\ + \sec A \sec B \sec C.$$

(1) and (2) are obtained by expanding $\cos(A+B+C)=0$, and $\sin(A+B+C)=1$, and dividing their expansions by $\sin A \sin B \sin C$, $\cos A \cos B \cos C$ respectively.

13. On the side BC of the triangle ABC are drawn two equilateral triangles, $A'BC$ and $A''BC$; likewise, the equilateral triangle $B'CA$, $B''CA$ and $C'AB$, $C''AB$ are drawn on the sides CA and AB respectively, Prove that

$$A'A \cdot AA' = B'B \cdot BB' = C'C \cdot CC'.$$

$$AA'^2 = a^2 + c^2 - 2ac \cos(B - \frac{\pi}{3})$$

$$AA''^2 = a^2 + c^2 - 2ac \cos(B + \frac{\pi}{3}),$$

$$\therefore AA' \cdot AA'' = \sqrt{\left(\frac{a^2 + b^2 + c^2}{2}\right)^2 - \frac{3}{4} S^2}$$

$$= \sqrt{a^4 + b^4 + c^4 - b^2 c^2 - c^2 a^2 - a^2 b^2}$$

a symmetrical result.

XIV. If (p, q, r) be the perpendiculars on the sides of a triangle ABC from the centre of the circumscribing circle, prove that

$$agr + brp + cpq = \frac{abc}{4}.$$

$$p = \frac{a}{2 \tan A}, \text{ \&c.}$$

Identity becomes

$$\tan A + \tan B + \tan C = \tan A \tan B \tan C.$$

XV. A circle is described through the foci of an ellipse and any point on its circumference. Two tangents are drawn to this circle through one extremity of the major axis. Shew that the locus of the points of contact of these tangents is a circle whose radius is equal to the minor axis of the ellipse.

Let AP, AP' be a pair of tangents;

$$\text{Then } AP^2 = AP'^2 = AS \cdot AS'$$

$$= (a - ae)(a + ae) = b^2.$$

Wherefore, \&c.

16. CP, CD are conjugate semi-axes of an ellipse; PNE is drawn parallel to the minor axis CB , meeting the major axis in N and CD in E . Prove that the area of the triangle

$$PCE \text{ is } = 2CB^2 \cdot \frac{PN}{CN}.$$

The Examiner requests us to state that there is an error in the enunciation; the result should be as under.

$$\text{Area} = \frac{1}{2} PE \cdot CN. \quad PE = \frac{b^2}{y}, \quad CN = x$$

$$= \frac{1}{2} b^2 \cdot \frac{x}{y} = \frac{1}{2} BC^2 \cdot \frac{x}{y}.$$

18. TP, TQ are two tangents to an ellipse at right angles to one another, S a focus, prove that

$$\sin^2 SPT + \sin^2 SQT = \text{constant}.$$

Comparing the equations to PT

$$\frac{xx^1}{a^2} + \frac{yy^1}{b^2} = 1, \text{ and}$$

$$x \cos a + y \sin a = \sqrt{a^2 \cos^2 a + b^2 \sin^2 a}$$

$$\frac{x^1}{a^2 \cos a} = \frac{y^1}{b^2 \sin a} = \frac{1}{\sqrt{a^2 \cos^2 a + b^2 \sin^2 a}}.$$

If r be radius vector to point of contact, and p perpendicular from focus on tangent,

$$\frac{p}{r} = \sin SPT$$

$$= \frac{\sqrt{a^2 \cos^2 a + b^2 \sin^2 a} - ae \cos a}{a - ex^1}$$

$$= \frac{\sqrt{a^2 \cos^2 a + b^2 \sin^2 a}}{a},$$

whence sum of squares of sines

$$= \frac{a^2 + b^2}{a^2}, \text{ a constant.}$$

Solution of problem No. 7, p. 143, Elementary Arithmetic (Smith & MacMurchy), by A. E. Moore, teacher.

£	s.	d.	
184	11	6	av'ge for 11 yrs., 1853-63
			11

2030	6	6	aggregate gain, 1853-63
76	8	4	loss in year 1853

2106	14	10	aggregate gain, 1854-63
151	9	10	= gain in 1863

$$11)2258 \quad 4 \quad 8 = \text{aggregate gain, 1854-64}$$

$$\text{£}205 \quad 5 \quad 10\frac{1}{2} = \text{average for the 11 years from 1854 to 1864.} - \text{Ans.}$$

The answer given in the text is £191 8s.; it should be as above.

CONTEMPORARY OPINION ON EDUCATIONAL TOPICS.

UNIVERSITY OF TORONTO.

CHANCELLOR BLAKE'S ADDRESS.

THE Chancellor rose and said that the proceedings of this Convocation being about to close, he would address them for a short time, in accordance with the custom which prescribed that some words should be spoken by the person presiding on such occasions as the present. He must commence with an expression of regret (in which he was sure all would join) that they had not present to-day one who had frequently presided here, and who had always cordially assisted in the proceedings—Vice-Chancellor Moss. The Vice-Chancellor was prevented by illness from being present, but the fact that in a few days he had expectation of being well enough to attend would shew that he was recovering. He was sure that all would agree with him in hoping that next year, and for many years thereafter, the Vice-Chancellor might be able, as he certainly was desirous, of attending the Commencement. He proposed to present to them some facts and some considerations with regard to our educational institutions, which well deserve the active interest taken in them by the people. The University of Toronto and University College were distinct institutions, yet so closely connected that he would be obliged in his remarks to refer to both together. Together they were certainly the crown and glory and the flower of our general system of education. In this country, where there was no great accumulation of wealth in single hands, where there were but few hereditary fortunes, where it was the lot—the happy lot on the whole—of almost all to earn their own bread by their own exertions, there had been in times past, and there still was, a temptation to cut short the education of the youth. This was a circumstance as far as possible to be got rid of, and in view of the importance to us of the avoidance of that diminution of education, every friend of the true progress of the Province must scan anxiously the statistics of education to ascertain whether we are going forward or backward. We must educate not merely those who took care of our souls, our bodies, and

estates, but also those who were to be our rulers and guides, the leaders of public opinion scattered through the country, and those who formulated public opinion in the halls of our various legislatures. We must educate our educators, and that these things may be done was of extreme consequence to our true progress. The universal dissemination of elementary education was of vital consequence. It ought to be our aim to see, as it was measurably our boast, that there lived in this country no young person who was ignorant of the elementary subjects of education. But it was equally important that, while we gave to all an elementary education, we should have a system which would provide for the superior education of those who were willing to devote their time and talents to study. The Report of the Minister of Education for the year 1878—the last year, he believed, for which it had been issued—contained some interesting statistics bearing upon this question. From that report it would seem that the school population, made up of children between five and twenty-one years of age, from 1871 to 1878 was about stationary, and numbered about 500,000. The number of those who attended Public and Separate Schools was increased from 445,000 in 1871 to 490,000, or about 10 per cent. If they assumed that this shewed that practically every child of school age attended school they would be starting out on a fallacious assumption, for there were a considerable number who, though above the age mentioned, still attended school, and who were included in the figures given, there were also a number of children who attended school only for a short time in the year. Still it would seem that so far as elementary education was concerned we were in a fair position. The number of Public and Separate schools increased from 4,600 in 1871 to 5,010 in 1878. In this branch we presented a gratifying contrast to England. There the school age was from five to thirteen years. Up to the year 1870 there had been no real effort to assume and act upon the duty that the State owed to its young, but the Elementary Education Act was passed in that year. There was at that time accommodation in the elementary schools for

1,900,000 children. In 1878 this increased to accommodation for 3,950,000—an enormous stride. Still it must be borne in mind that their school population was calculated at about 5,000,000, and it would be much larger were their school age the same as ours. The attendance in 1878 was 3,150,000, so that there would be nearly 2,000,000 children, or of the whole population two-fifths, not attending school at all. Upon this question we might congratulate ourselves upon holding a very fair position. The High Schools in 1871 were 102, and in 1878 there were 104, but the increase of scholars was very striking. In 1870 there were 7,490 persons attending the schools, in 1877, 9,230, and in 1878 it had risen to 10,570, or an increase of 34 per cent. as compared with an increase of 10 per cent. in the elementary schools, shewing that there had been a growing appreciation on the part of the public of the advantages of extending the time to be devoted to the education of their children. As was to be expected, the same influence which had produced these results had extended to this institution, as would be seen by the figures he would quote to them. In 1871 the number of entrants was 44, and the number of undergraduates actually taking the course of the University was 139. In 1877 the number of entrants rose to 73, and of undergraduates to 259. In 1878 there were 151 entrants and 290 undergraduates. In 1879 there were 161 entrants and 390 undergraduates. For the present year the numbers were not yet made out, but it was expected that they would be able to boast that for 1880 the number of undergraduates would be not less than 400. Nor were the sources from which these undergraduates and entrants were derived of less consequence than their numbers. They indicated the making up of our educational machinery, and, so far as this was concerned, the statistics were most satisfactory. As nearly as he could ascertain, the 150 matriculants for 1878-9 might be divided as follows: From Upper Canada College, 15; from 26 High Schools, 84; from 8 Collegiate Institutes, 60. The other sources comprised Dundas Institute, Woodstock Institute, Rockwood Academy, Assumption College, Ottawa Normal School, St. Michael's College, Wilberforce Institute, Yarmouth Seminary, private tuition, and those who were self-taught, making in all fifty different sources from which these undergraduates have been derived. That was evidence of the truly Provincial character of this institution in its practical working. That told them that it was not, as its name would seem to indicate, a merely local University; and he had sometimes—*Torontonian* though

he was—regretted that they had named it the "*Toronto University*;" it was a *University* of the whole Province, and young men were sent from all parts of the Province to take advantage of the facilities for education which it offered. From the High Schools (including the Collegiate Institutes) the number of students received in the year 1878 was 124, which in 1879 was increased to 136. He was sure that all would wish with him that that state of things might not merely continue but increase, that there might be a still wider diffusion of these various seminal principles, that as the High Schools grow, and flourish, and strengthen we may boast not merely of 35 out of 100 of the High Schools and Institutes sending their men to the University, but that a still larger proportion may do so. And still more, they might find county after county, town after town, sending their picked men from the elementary schools to the High Schools of the county, and from there on to this University to receive its honours and reap the rewards of their labour. There was still much to be done. There was still an immense deal too much of this practice of sending young men into the world without a University training to begin the battle of life. In this country it was more especially essential that, where at all possible, the training of young men should be continued into the University. The great bulk of those sent forth from the University did not stay in this city, but went to other places throughout the Province. In the young and poor country in which we live, and particularly in the more rural part, it was difficult for the young man, whatever his business might be, to continue the course of mental training which he began in the University. There were fewer libraries, fewer opportunities for reading, less mental friction and discussion, and necessarily a less advanced state of culture in the people by whom he was surrounded. In his own (Mr. Blake's) profession the proportion of those entering who had a University training was smaller than he could wish. He had taken the trouble to collect some statistics for the last five years, shewing the number of entrants to the Ontario Law Society of Osgoode Hall, and he was sorry to say that out of the very large number only about one-fourth were graduates in any University, and three-fourths were men who had not taken a degree. Now, he had no doubt whatever that the great bulk of those men would have liked a University training, and he had no doubt that it would have been a great thing for the public if they had obtained a degree. What he wished to point out to the friends throughout the Province who had children growing up was

that if they hoped for the real advancement of their sons the best investment they could make for them was a University training; if they could not give that much, at any rate a High School education. They would take what they could get, but if possible let the sons go to a High School first, and to the University afterward. But it was not for the professions only that this institution was founded; it was not for the professions only that learning was wanted. A man would be a better financier, merchant, civil engineer, farmer, or anything else, for the knowledge, the training, the habits of industry, he would acquire in the course of his career as a University student. He was greedy enough to hope that—important and striking as was the progress which he had just stated—they would be able to exhibit for many years to come an equally striking advance. An increase in the numbers of those attending the University was a most important factor in improving the quality of University work. So far as the student was concerned it gave an increase of honourable and useful competition, which led to more enthusiastic study. It led to a larger and more generous *esprit du corps*, and—a consideration which he deemed to be of the highest consequence—they had a better opportunity for the formation of those half dozen friendships which were to last through life, and which were the sweetest pleasures of existence in after years. In that he believed was the mistake those parents made who sent their children to be educated in foreign Universities, thus allowing those friendships to be formed, friendships which must be broken, and the young man started in life without the encouragement of knowing that he was surrounded by his friends. Increase of numbers must lead to the development of special tastes and aptitude for particular subjects of study. All this reacted upon the teacher. There was a great source of encouragement to one who had a large class of pupils, among whom were many bright spirits, to prepare himself thoroughly in what he was to teach. A university was not able to do its full work unless it contained a very large number of students. They wanted first their increased numbers. The law provided that municipalities might endow scholarships and fellowships in the University "for competition among the pupils of the High Schools of the county as the Council deem expedient for the encouragement of learning among the youth thereof." He desired to call the attention of the rural municipalities to this wholesome regulation. He did not want to see it a dead letter any longer. He could not conceive any more useful expenditure, or one that should give a higher gratification to the members of the

Municipal Council than this, for it enabled a gifted son of the county to come to Toronto and maintain himself during the progress of his studies; it would enable the county to send down its brightest youth, and the University would undertake to send him back its brightest man. This means of conferring such a favour upon a young man did not humiliate him, but conferred credit upon him. It was with deep regret he observed that they had found it necessary to reduce their own scholarships, but he hoped there would be some effort made to make up for this in the way he had pointed out. They wanted more facilities. It was not enough that students should simply be able to get through. He did not care much about that, but wanted them to be able to master their subjects. Those who had aptitudes for special subjects ought to have all possible facilities for the prosecution of their studies, for that reason he desired to see the library and the museum extended and enlarged. Of late years some important additions had been made to the library, still a further expenditure was necessary. The museum required in these modern times further encouragement than they had been able to give it. So with reference to their teaching power. The fast-increasing numbers would have necessitated an increase in the staff of teachers, even though there had not been the great changes in the curriculum, to which reference had already been made. There ought to be new chairs established for lecturers in new subjects. He was not about to discuss the faculty of medicine or law from the professional point of view, but he claimed that no man could claim to be, in the true sense of the word, well educated unless he had some knowledge of medicine and of the general principles of justice and of jurisprudence. The young men of the country ought to be made acquainted with the principles of constitutional law in order to be able to take their place in working out our constitution, which was a complicated one, involving as it did a distinction between the powers of the several Legislatures. They wanted further facilities for developing special talent by a system of post-graduate classes. He hoped for fellowships here some day. They could not expect young men with talents adapted for special lines of study to remain in the country with their education uncompleted. The thirst for knowledge would draw them away, and if they once left the chances were against their ever returning. Nor could the establishment of these post-graduate classes be without a very important influence on the character of the whole teaching in the undergraduate class. It would result, on the part of the teachers, in a more complete mastery of the subject, and in

a clearer elucidation by them of the principles and facts which were material to the acquisition of a knowledge of the subject. In these classes the part of the teachers depends not upon the number of students so much as upon the character of the subject. There were some subjects, such as literature or history, which might be taught just as well when the class was one hundred as when it was ten, but when they came to subjects of demonstration and analysis, which required the use of the laboratory or the museum, which required more than the attention of the ear for the mastery of them, it was clear that there was difficulty in teaching more than a few at one time, and the public must not suppose that because a proportionately larger number of teachers was required in some branches, that therefore but little work was being done. It had been largely on account of the prominence which was given to these subjects in Germany that she had attained such success, and that that country had been placed in the leading position in many of the branches of experimental science. There was another question to which reference had indirectly been called to-day, and that was the great question of the higher education of women. They had already established local examinations by which special certificates were granted to women. They had admitted women to the regular examinations. In 1878 the number of women before the local examiner was twenty-two, and in 1879 it was twenty-four, the number of matriculants in 1878 being four and in 1879 eighteen, and but for the increase in the number of women there would have been no increase in the number of matriculants for that year. Last year one of the scholarships had been taken by a woman, and the distinguished honour of a double scholarship had this year been taken by Miss Charles. But much more remained to be done. In this particular England had shewn us an example and had led the way. Local examinations for girls were established in Cambridge in 1865, at six centres in which the examinations were held. In 1878 there were 126 centres, the candidates numbering no less than 2,379. In Oxford the examinations of boys and girls were in common, and yet 30 per cent. of the total of those examined were girls. The general result was that the girls took the lead in modern languages and some other branches, while they were behind and weak in classics and mathematics—a result which would be expected because of the nature of their previous training. Girton Hall, a college especially for ladies, was established about ten years ago. It was established precisely on the same principle as the other halls. In 1871 there were about sixty residents. They went through the same

course, and their examiners were the same, though they were not officially recognized in the ranking. Last year one of the students in Girton College would have taken, had her name appeared on the official list, and practically she did take, a high place amongst the wranglers of the year. Newnham Hall was established on a more elastic principle, but the general results had been very satisfactory.

There were also two halls especially for ladies at Oxford, and that was not all. London University, the model of Toronto University, in 1878 opened all its degrees to women; King's and Queen's Colleges, in Ireland, had done the same, and several women had been duly enrolled as physicians. He did not know what their new M.D.'s might think of it, but he had often thought it would be a great boon to the community that that profession was one in which women might do a great and useful work. A great work had been going on, particularly with reference to the intermediate examination of women. Had they not then something to do? What he had said to them shewed that they had a great deal to do. While they might claim some gratitude for their progress in learning, they were called upon to aid in this work. To do this work they must enlarge their expenditures. Did they suppose that Ontario had kept down her expenditure notwithstanding the increase of the public schools? No. In 1871 the salaries paid to teachers in the elementary schools amounted to \$1,190,000, in 1877 to \$1,850,000, and in 1878 to \$2,010,000, an increase of 69 per cent. In the High Schools the salaries increased from \$105,000 in 1871 to \$223,000 in 1878, an increase of 112 per cent. The Provincial authorities had wisely recognized the duty of having more and better paid teachers. The total expenditure upon education in Ontario (including in 1871 private and collegiate education and unpaid balances, but excluding these in 1878) was in 1871 \$2,230,000, and in 1878 \$3,520,000, or an increase of about 75 per cent. But what was the case of the University? The appropriation in 1871 was \$47,500; in 1875, \$51,000; and in the last three years, \$54,000, shewing an increase over 1875 of 13 per cent. Even the additional numbers admitted to the institution would demand a much greater increase than this, particularly in view of the increase in other branches of public education. Did he then make any immediate demands for more money than was at the disposal of the University? No. If he did he believed it would be granted. In old times there were over-drafts upon the resources of the institution, and part of the capital had to be drawn to make up expenditures upon revenue account. Since then they had been spending

about \$10,000 a year less than the actual revenue in order to make up this deficiency, which was now about \$30,000. It would be a good thing in itself to make up the amount, but he believed it was not worth while to starve the institution now with a view to leaving it with a good capital when it had fallen behind the times, and the public had lost confidence in it. He advocated, therefore, that the full revenue should be appropriated for the just requirements of the University, leaving the

balance to itself, until some better way was found of paying it. They should take advantage of the popular interest in the University, and of the revival of education, and should put the University in a position to do its proper work. If the expenditure of their full income would not enable them to do this thoroughly, it would at least go a great way towards that desirable end.

The Chancellor then declared Convocation closed.

CONTRIBUTORS' DEPARTMENT.

SOME REMARKS ON THE THREE R'S.

[The following paper will appear to many of our readers like a voice from the dead, or it will remind them of Don Quixote tilting at windmills; there are others who will heartily endorse most of what it contains, and will doubtless be prepared to support its statements by facts within their own experience. We insert it because we are desirous of keeping to our plan of allowing the fullest intelligent discussion on every educational topic, for it is only thus that correct views can be evolved.]

WHY is it that the young people taught in our public schools read and write so badly, and speak so ungrammatically? It is true they *do* learn to read and write, which of course is something, but when one considers the large sums spent on education in the Dominion the results are far from what they should be.

We hear a great deal about Algebra, Analysis, and Mathematics, but I think most people will agree that reading and writing, spelling and arithmetic come first. Arithmetic I will say nothing about, for I believe it to be on the whole well and thoroughly taught. The school teachers themselves have, for the most part, been taught at the Public and Normal Schools, where great stress is laid on such studies as Mathematics and Analysis, all good and admirable things in their place but which most certainly belong to advanced education, and are only suitable for boys whose parents intend them to spend some eight or nine years at school and college. We know that under the best school system in the world, poor people can no more expect a superior education for their

children than they can hope to drive in their carriages, simply because they require them to earn their own living at an early age instead of spending the time at school. They have therefore a right to demand that what their children do receive shall be of the very best. To read well and fluently, to speak correctly, to write a good hand which is easily read, and to cipher well, are of far more importance to a boy or girl who has his or her own way to make, than all the Algebra and Analysis in the world.

I have heard teachers talk glibly of analysis, who at the same time could not speak ten sentences without a mistake in grammar; I have seen a note, the joint composition of two schoolmasters, who were considered above the average, and one of whom is now President of a Teachers' Association, which began in the third person and ended in the first; and I have heard whispers that the spelling of another was far from being perfect. "But then," added my informant, "he is such a first-rate Latin scholar."

The lady teachers of private schools, on the contrary, but seldom lay claim to a knowledge of analysis, yet the grammar they speak and teach is faultless; it is not often they pretend to be mathematical scholars, but on the other hand, their pupils generally write well and legibly; I am afraid that algebra is unknown to most of them, but then they teach their pupils to spell correctly, to write a good letter, and to have a very fair knowledge of history and of geography. I wish to be understood as in no way referring to any but the common free schools of the country: those in the towns are better; no doubt, the higher salary attracting the more capable teachers; but why should our farmers have their children taught badly, or rather taught on a bad system?

The consequence is that children go to

school five, six, and seven years, and at the end of that time are far more backward than they would be if proper attention were paid to elementary instruction. Let analysis, algebra, and mathematics be banished from all but the higher schools, at all events till good readers and writers, correct spellers and speakers, are a much more frequent outcome than they are at present.

I would ask, To whom is the selecting of the school books entrusted? It will be admitted by all who have gone through it, that grammar is a difficult study for children, dry, hard, dull, and uninteresting at the best, for though it comes to them afterwards, they can scarcely understand it when very young, unlike spelling, history, and geography, which interest and often give pleasure; so that the simpler and easier the grammar the more thoroughly the pupils will learn it. The grammars of Lindley Murray and of Lennie are as easy as it is possible for such a hard study to be made; they have hitherto been thought good enough for the best schools in England and Scotland; by far the largest number of persons who speak English well have been taught by them; and yet instead of either of these, an American book, Swinton's, is used, the sole result of which is to disgust the pupils for ever with the study of grammar. It is badly written, tedious, intricate, and entirely incomprehensible to children. Let any one examine Swinton's Grammar, revised by the Principal of the Normal School in Nova Scotia (not a University man), and see for himself if I am not right. I do not think that Americans, in spite of their superior school system, can be said to be remarkable for the correctness of their speech, and surely if we are to keep the pure well of English undefiled, we ought to use an English grammar, not an American one. If we can get a better book than Murray's or Lennie's, by all means let us do so, but in the meantime it would be wiser to keep to those books by which the best educated people have been taught.

The attempt to learn in a few years what ought to be the work of many, is a profound mistake, and the fact that few people who can afford to send their children to private schools, send them to public ones, shews exactly in what estimation the teaching there is held. The truth is that a good education takes many years to get, and after all we must go back to the old idea, that to know a few things well and thoroughly is much more useful in after life, than to have learned of Latin, botany, geology, algebra, chemistry, mathematics, and analysis, a very, very little, and of reading, writing and spelling, a very, very little also.—MARY THORNCLIFF.
Kentville, U. S.

THE TONIC SOL-FA METHOD OF TEACHING SINGING.

A VERY important step in connection with musical education in England was the reception, in July last by Earl Spencer and the Rt. Hon. A. J. Mundella, M.P., at the Education Department, Whitehall, of a deputation advocating the above method of teaching singing. This action was taken on account of a supposition that it was the intention of the Government to require the teaching of Hullah's System to the exclusion of the Tonic Sol-fa method. Of late years both systems have been employed, but it is claimed that the Tonic Sol-fa has been much more popular and successful, and its possible exclusion is regarded with alarm. That the deputation included such men as Dr. Stainer, organist of St. Paul's, and Mr. Brinley Richards, was a guarantee that its claims were worthy of consideration. The points of difference between the Tonic Sol-fa method and Hullah's system are two-fold. In the first place in Hullah's system the DO is immovable, in the Tonic Sol-fa it is movable: that is, in the former, DO corresponds to C of the staff notation, and LA to A; in the latter DO is always the tonic or key note of the major scale, and LA of the minor scale. In the second place, while in the former system the ordinary musical notation is used from the commencement, in the latter a new notation is used, which has the advantages that it can be printed from ordinary printing type, takes less space, is much cheaper, and easier to read. That it has been successful is shewn by the fact that there is hardly a town or village in England where classes have not been established, and in cities and large towns the works of the great masters are rendered, having been acquired by the Tonic Sol-fa system.

And what is our position in Ontario? For over twenty years the Hullah system has had a fair trial in the Normal and Model Schools, and with what results? Vocal music is laid down as one of the branches to be taught in our public schools, but we have no teachers competent to undertake the task of instruction, nor is there the least prospect, we fear, of our soon having any. A few of our Collegiate Institutes are giving some attention to Vocal Music. If one of them would import a teacher capable of imparting instruction under the Tonic Sol-fa method it might prove an era in the history of musical education in Ontario.

Lindsay.

J. H. K.

"THE TEACHER'S DREAM," a poem by Mr. W. H. Venable, will be issued shortly in an illustrated form by Putnam & Sons, as an illustrated gift-book.

SCIENCE DEPARTMENT.

[A series of Notes prepared for THE MONTHLY, by Henry Montgomery, M.A., Coll. Inst., Toronto.]

THE third session of the Natural History Society of Toronto has just drawn to a close. Although for lack of Governmental or other liberal pecuniary assistance this Society is reluctantly obliged to fall far short of the objects in view, yet considerable energy and enthusiasm are manifested by its members. Additions have been made to both museum and library, and several important papers read and addresses delivered at its meetings throughout the past winter.

WE are informed by Mr. W. E. Hidden that he has in his possession as many as seven crystals of quartz, having the *basal plane* present, and that all of them have been collected in Burke County, North Carolina, during the past year. The basal plane is rarely met with upon a quartz crystal, only a very limited number of such crystals having been known to mineralogists before the recent discoveries referred to. Similar specimens were also found in Alexander and Catawba Counties of the same State.

AN American explorer has lately discovered an insect of the family *Coccidae*, to which the cochineal or scale insects belong. It has been found in Yucatan, and is there known by the name of *Neen*. In that part of Central America the *Neen* occurs in myriads, is yellowish-brown in colour, and gives out a peculiar odour. The body contains a considerable quantity of a greasy substance, which is believed by the inhabitants of that region to possess useful medicinal properties for the skin. When strongly heated the more volatile oils are driven off, and a tough shellac-like wax is left behind. This wax is said to make good varnish, and, when burnt, to be converted into a thick plastic mass, resembling a solution of India rubber.

THE American Association for the Advancement of Science held its annual meeting in the City of Boston during the week beginning August 25th, 1880. Many of the most prominent scientists in America were present on the occasion, and participated in the proceedings. Scientific papers of great interest and value were read and discussed.

DRY pine cones are very combustible; they are easily kindled with a match, and are therefore frequently used to kindle fires in different European countries. They are so resinous that a couple of cones will readily ignite a wood fire, and very few more are needed to start a coal fire. In Paris there is hardly anything else made use of for kindling material than pine cones. Why are they not used for the same purpose in the large cities of this continent?

SEVERAL insects possess electrical properties similar to those of the *Gymnotus electricus* (Electric Eel) and *Raia Torpedo* (Torpedo Ray). *Reduvius serratus* or "Wheel-bug" of the West Indies gives an electric shock to the individual it touches. Major-General Davis tells of having picked up the "wheel-bug" and placed it upon his hand, to which, upon touching, it administered a shock like that from an electric jar or machine. He felt it "as high as his shoulder, and dropping the creature, he observed six marks upon his hand where the six feet had stood." On suddenly touching with the hand a beetle of the family *Elateridae*, Lady de Grey experienced a shock extending as far as the elbow. Another instance of the effect upon the human economy resembling an electric shock is recorded as produced by the larva of one of the South

American *Lepidoptera*. This large caterpillar was picked up by Capt. Blakeney, R N., who immediately felt an electric shock in his arm, and of such force that his life was almost despaired of, and his arm became useless for a considerable length of time.

A SAMPLE copy of a new weekly record of scientific progress, illustrated, and entitled "Science," has recently come to hand. It bears the date July 3rd, 1880, and is published in New York, with John Michels as Editor. Many of the names mentioned as associate editors and correspondents are those of justly celebrated scientists. Among the articles which appear in the sample number may be noticed "A Bit of Summer Work" by Prof. Burt G. Wilder, of Cornell University; "Electricity as Power," by Francis P. Upton, Esq.; "The United States Naval Observatory, Washington," by Prof. Edward S. Holden; and "Diatomaceæ versus Desmidiaceæ" by Prof. H. L. Smith, of Geneva, N.Y. Mr. Michels expresses the desire that "Science" as a weekly journal may, in the United States, take the position which "Nature" so ably occupies in England, in presenting immediate information of scientific events.

THERE is now in extensive use upon this continent and in some European countries an article of diet, bearing the polysyllabic name Oleomargarine, or rather Oleomargarine and Arnotto, and possessing also a very formidable chemical formula. It is remarkably like butter in both appearance and flavour, notwithstanding the assertions of dairymen to the contrary. This fatty compound, sold under the name of butter by numerous grocers, is manufactured in enormous quantities at New York, Philadelphia, Baltimore, New Haven, Boston, Providence, St. Louis, Chicago, Cincinnati, Pittsburgh, Indianapolis and Louisville. The New York Commercial Manufacturing Company produces about 45,000 pounds of oleomargarine every day. The following is an outline of the process of manufacture: It is made from

the fat of cattle, killed by the butchers of the city. This fat is collected and conveyed every evening to the factory, where it is washed and separated out, the inferior portions going to make soap, the best pieces being finely minced, and then melted in double-walled tanks containing hot water between the walls, at as low a temperature as possible, usually about 50 degrees centigrade. During the melting process a revolving shaft with arms stirs it thoroughly; then it is allowed to settle, and the supernatant liquid is removed to wooden tanks, where it remains for thirty-six hours, in order that the stearine it contains may become granulated. Then, to get rid of stearine it is packed in heavy duck cloths and subjected to an increasing pressure. This forces the transparent liquid oil or oleomargarine out into a tank, the solid white cakes of stearine remaining behind in the cloths, to be employed in candle-making. A quantity of milk, about 20 per cent., is mixed with the oily liquid, and also some arnotto or annato to give it colour, and then the mixture is well churned. This done, it is removed to a tank half full of ice. Being thus suddenly cooled it becomes greatly granulated so as to bear a strong resemblance to natural butter. Afterwards it is salted and put up in tubs, or in smaller packages, for sale. If the manufacture of this so-called artificial butter be attended with scrupulous cleanliness and strict honesty there would seem to be no good reason why the said article should not form an admirable substitute for the ordinary butter produced from the milk of cows. It is pretty generally held that the fatty matters which in milch cows go to form the butter of the milk, in cows that do not give milk, are deposited in the tissues as fat. If this is true, the butter obtained from the tallow of the cow may, after all, be just as truly *natural* butter as that obtained from her milk. The only question of vital importance appears to be one of cleanliness in its production, and that is a consideration which obtains equally in both processes.

PUBLIC SCHOOL DEPARTMENT.

[Contributed to, and under the management of, Mr. S. McAllister, Headmaster of Ryerson School, Toronto.]

MEETING OF THE PUBLIC SCHOOL
SECTION OF THE PROVINCIAL
ASSOCIATION.

THE month of August has come and gone, and with it the most interesting event of the teachers' year—the annual convention of the Ontario Teachers' Association. The programme was rather a scanty one in public addresses, though these are but the corolla of the flower, the fructifying elements being found in the morning work of the sections and the afternoon work of the general Association. There were two pleasant and interesting events connected with the proceedings that will make the meeting a "sunny memory" to those who attended it. Mr. Crooks, the Minister of Education, shewed his estimate of the importance of the meeting by his presence on two occasions, and by the assurance he gave the members in a pleasing speech that he read the reports of the proceedings with a great deal of interest, and was prepared to give serious attention to any representations made to himself that had for their object the improvement of our educational system. The other event was the garden party at Mr. Goldwin Smith's. A few years ago the Provincial Association took delight in honouring this gentleman by making him its president for two consecutive years. Since that time he has not only identified himself with it by subscribing to its funds as a member, but has more than once come to the relief of the Board of Directors by stepping in to fill a gap in the proceedings. To give further evidence of his friendly interest in the Profession and its objects he has on two occasions tendered his hospitality to those attending the meetings. We have no doubt that the sentiments expressed by

Mr. McFaul, who moved a vote of thanks to Mr. Smith on the late occasion, were but an echo of what all felt who were present, and that the remembrance of the evening spent on his grounds would always be a pleasant one.

The work cut out for the public school section was, as we foreshadowed, more than it could overtake. The Section did little else on Tuesday than organize by appointing Mr. Doan, of Toronto, Chairman, in the absence of Mr. Dickinson.

On Wednesday "Representation of the Provincial Association" was the first subject taken up. It was introduced by Mr. Chapman, and proved a fertile subject for discussion. One member proposed that there should be representatives appointed from each of the three sections—High School Masters, Inspectors, and Public School Teachers. Another was of opinion that the county associations should send representatives without regard to the branch of the Profession to which they belonged; yet another proposed to let the Public School Section be made up of representatives, and the others allowed to remain as they are; and a fourth doubted the necessity of representation at all. It was pointed out, too, that even with representation there would still be danger that the Association would not be of a sufficiently representative character, as many of the remote county associations would be unable or unwilling to bear the large travelling expenses of their delegates. To obviate this objection it was suggested that the Department might transfer part of the grant now made to local associations to the Provincial Association, and that this should form a fund out of which a mileage rate should be granted to all delegates attending the convention for their travelling expenses. Messrs. Munroe and

Smirle, of Ottawa, Mr. McQueen, of Wentworth, Mr. Boyle, of Elora, Mr. Jennings, of Uxbridge, Mr. Alexander, of Galt, Mr. Suddaby, of Berlin, and Messrs. Spence and Morrison, of Toronto, joined in the discussion. It was finally resolved that each local association should appoint five delegates to attend the Provincial Convention, one at least of these being an Inspector, and one a High School Teacher, except in those associations where there are no High School masters.

Mr. Harvey was on hand to introduce the subject of Recent School Legislation. The discussion on this took a wide range, and was participated in by Mr. Alexander, Mr. Taylor, Mr. Johnson, and others. The acts of the Department as well as those of the Legislature were brought under review, and very strong opinions were expressed against the present methods of granting permits, and of prolonging the duration of third-class certificates, owing to the abuses that had sprung up in connection with them. Indeed no subject that came before the Section was spoken of with such warmth.

The discussion closed with the adoption of a resolution condemning the present method of granting permits, and of prolonging the duration of certificates about to expire, as liable to abuse; and recommending such change as would secure the granting of these privileges to those only who are worthy of them. The resolution also recommended the introduction of the ballot in the case of elections of Public School trustees as a protection to teachers in the exercise of the franchise, as well as for the general good.

Mr. Boyle read a carefully prepared paper on the Superannuation Fund; and Mr. McAllister presented a report of the Committee on Superannuation appointed by the Section at the last Convention to interview the Minister of Education in regard to the subject. A lively discussion followed in which Mr. Duncan, Mr. Allen, Mr. Harvey, Mr. McQueen, Mr. Taylor, Mr. Alexander, Mr. Smirle, Mr. Phillips, Mr. McLean, and Mr. Chapman joined.

The substance of some resolutions passed

by the Essex County Association, which were presented by Mr. Duncan, formed the basis of a resolution embodying the opinions of the Section. It was to the effect that the length of active service to entitle any teacher to a participation in the fund should be shortened, say to twenty-five years, that the allowance should be increased, and be made proportionate to the annual subscription, and that the widows of teachers should be made some allowance from the fund.

The Section without discussion adopted a resolution introduced by Mr. McAllister on the subject of Rotation of Examiners. It asserted the opinion of the Section that the introduction of this system would add to the improvement of education throughout the country.

Mr. Dickinson, the chairman, was in his seat on the second day, and found his functions as presiding officer so much of a sinecure that he was able to take an active part in the discussions. His presence on this day only, accounts perhaps for the fact that the subject his name was associated with—Means of Supply of Teachers—was not taken up. The meeting had begun to enjoy the pleasure of listening to a carefully prepared paper by Mr. Herner, of Waterloo, on "Uniformity of Text Books," when it was found that the time for it was so short that justice could not be done to either Mr. Herner or his subject. As it is one that not only will keep, but, like wine, will improve with age, he kindly consented to read his paper at the next meeting.

Messrs. McAllister, Doan, and Spence were appointed to act as representatives of the Public School Section on the Legislative Committee. The officers of the Section for the ensuing year are: Chairman, D. Boyle, Elora; Secretary, William Rannie, Newmarket; Executive Committee, A. Smirle, Ottawa; S. McAllister, Toronto; J. Duncan, Windsor; W. B. Harvey, Barrie; J. S. Carson, Strathroy.

COUNTY MODEL SCHOOLS.

AT the recent Convention of the Ontario Teachers' Association, the question of County

Model Schools elicited considerable discussion. Perhaps no subject on the programme called forth more thoughtful remarks, or awakened a keener interest. All present seemed to be alive to the importance of making these schools as efficient as possible. The great problem to be solved is, "How shall we provide the necessary number of properly trained teachers to take charge of our public schools?" Evidently our two Normal Schools are unable, under their present management, to do this, even with the facilities they already possess, and it therefore remains for some other scheme to be devised. To establish additional Normal Schools at the present time would be unwise, since the expense of maintaining them would be a serious item in our annual disbursements for educational purposes; and it has yet to be shewn that those already established are producing results which the country, owing to the large annual expenditure they entail, has a right to expect from them.

Certainly if we may place any reliance on the complaints of students attending one of them, the training for their life's work that goes on there is little better than a delusion and a snare. Hence up to the present time no better plan for training teachers has been devised than the system of County Model Schools. So far as our present information goes these institutions are doing a useful work, and are worthy of greater public recognition than they have yet received. But they are yet in their infancy. In the process of their growth, as public opinion ripens in their favour, it may be considered advisable to group a number of counties into districts for Model School purposes; and keep these schools open as training institutions the whole year. Should such a plan as this be determined on the present County Boards might be dispensed with altogether, and their functions as an examining board be performed by the Inspectors of the Model School district, who might receive the questions on most of the subjects they had to examine upon, from the Central Board of Examiners. Whatever may be the outcome of the present discussions, it is earnestly to

be hoped that no retrograde movement will be made, but that an advance all along the line will be the order of the day. It is becoming more apparent every day that trustees are beginning to feel that trained teachers are far superior to raw recruits, although these may have the necessary literary attainments. The certainty of knowing how to do the work, and being able to do it in a workmanlike manner, is now fully considered an essential requisite in the qualifications demanded for teaching in our public schools, and we trust that this will be encouraged, whether by training in the Model Schools or by any other means effectual in imparting it.

DEPUTATION ON MODEL SCHOOLS.

A DEPUTATION, consisting of Professor Young, G. W. Ross, R. Alexander, J. H. Smith, J. Dearness, and E. Scarlett, waited upon the Minister of Education on Thursday, 12th August, immediately after the discussion on Mr. Dearness' paper in the Teacher's Convention, to lay before him the resolutions adopted in connection with Model Schools. These resolutions affirmed, (1) that Head Masters of these schools should be holders of first class certificates; (2) that the legislative grant should be not less than \$200, and that County Councils should be required to provide an equivalent sum, either by making a grant for the purpose or by imposing a fee on each pupil-teacher of not more than \$10; (3) that the Model School term should be extended to three months; (4) that an assistant should be appointed during the Model School term, to enable the head master to devote more attention to the pupil-teachers; (5) that these masters should be required to carefully supervise the methods of teaching pursued by the students, and award the marks given them while in attendance; (6) that not more than five pupil-teachers for each room used for Model School purposes should be admitted at one time; (7) that an extra room for Model School purposes should be deemed indispensable in any

Model School building; (8) that a convention of Model School masters should be held to discuss the best means of increasing the efficiency of these schools, and of securing greater uniformity in awarding marks.

The Minister received the deputation courteously, and entered warmly into a consideration of the methods proposed to improve the

Model School system. The only resolution that was at all taken exception to, and that not by Mr. Crooks himself, was that relating to the length of the Model School term, it was considered expedient that at present it should not exceed ten weeks in length. The Minister promised to give the resolutions his serious consideration.

HIGH SCHOOL DEPARTMENT.

HIGH SCHOOL MASTERS' SECTION.

At the late meeting of the Teachers' Convention held in Toronto, the following resolutions were unanimously passed. It will be seen that in several topics there is quite a marked change of opinion since last year, and we need only say that we believe the sentiments embodied are those of the Masters generally. It is to be hoped that when they have been brought formally under the Minister's notice he will see that the adoption of the suggestions they convey are in the interests of education. The discussions were long and vigorous, and in what have hitherto been subjects for difference of opinion, there was a most remarkable unanimity.

I. Inasmuch as the Department has issued a regulation appointing Head Masters of High Schools presiding examiners in their own schools at the entrance examinations, in those cases where the Inspector cannot be present, and inasmuch as the Head Masters have their full share in the examining of the papers afterwards, the High School Section would respectfully recommend that the Head Masters be placed on the same footing as the Inspectors with regard to remuneration, as is already done in a number of schools.

II. Inasmuch as the Intermediate Examination has reference largely to work done in High Schools, and as often those appointed to preside at the examinations have no special fitness for the work, the High School Section think that, as a class, the High

School Masters are most competent to preside on such occasions, and would respectfully suggest to the Minister of Education the propriety of making appointments as examiners from among such, direct from the Department.

III. That this section would desire to impress upon the Minister of Education the advisability, in the interests of education, of adopting the principle of rotation of examiners as put into practice in connection with the examinations of the University of Toronto.

IV. That in order to secure a more regular gradation in the standard of the papers, the High School Section would recommend that the examiner who prepares the paper in any subject for the entrance examination should also prepare those for all the other Departmental examinations in that subject.

V. That taking into consideration the object of the Intermediate Examination, and the instructions given to the examiners by the Honourable the Minister of Education in his circular of December, 1877, this Section considers that the paper on English Literature given at the last examination assumed too great maturity on the part of purely Intermediate candidates; that the paper on Arithmetic was too difficult, while that on Algebra was wholly unsuitable.

VI. That in the opinion of this Section the tendency of the Intermediate Examinations has been, and is, to give undue prominence in our schools to the subjects comprising the

mathematical group; and to prevent the other departments from receiving that measure of attention to which their importance entitles them.

The subject of the status of our Collegiate Institutes was taken up, and considering the condition of matters, very temperately and fairly discussed. No action was taken, but the matter was referred to a committee to take such steps as it might consider conducive to the interests of education.

The relation of the University to the High Schools was fully entered into, and the explanations of his course given by the High School representative in the Senate provoked by the discussions were completely satisfactory. It is evident that whatever reason the High School Masters may have to object to the course of the Senate in some matters, our representative has fully discharged his duty. To strengthen his hands the committee passed the following resolutions:

1. That the present regulations of the University Senate preventing candidates over twenty-three years of age from obtaining scholarships at the Junior Matriculation Examinations should be amended.

2. That this Section would respectfully urge upon the Minister of Education the advisability, in the interest of the High Schools, of taking steps to give the High School Masters additional representation on the Senate of the University of Toronto.

3. That in the opinion of this Section, before the Senate finally adopts any statutes or resolutions affecting the interests of the High Schools, they should authorize the registrar to furnish the representative of the High School Masters with such documents as he may deem necessary for obtaining thereon the opinion of the High School Masters, or of a committee of them such as they may appoint for that purpose.

Mr. Millar gave notice that at next meeting of the Section he would move that the regulation requiring attendance on lectures before receiving a degree in Arts should not apply to Public School teachers and assistants in High Schools.

MEDICAL COUNCIL EXAMINATION.

THE following are the changes to be made in this examination. It will be evident to everyone that their effect will be to force High School Masters to refuse to do the work, unless the candidate takes the Junior Matriculation Examination. But this subject we shall take up again.

The Matriculation Examinations will be held in Toronto on the first Tuesday and Wednesday in April, 1881.

In this examination writing and dictation will be included: correct spelling and legible writing will be considered imperative.

2. The rules laid down for conducting the Professional examinations shall be observed in all respects at the Matriculation Examinations.

3. Every Student of Medicine must, before his professional studies begin, pass a satisfactory examination upon the following subjects, before the Examiners of the Council:

ENGLISH LANGUAGE, including Grammar and Composition,

ARITHMETIC,

ALGEBRA, including Simple Equations, GEOMETRY, first two Books of Euclid,

LATIN, Translation and Grammar;

And upon one of the following subjects (of which students are recommended to select either Natural Philosophy or one of the Modern Languages), the candidate having the option of naming the subject upon which he* will be examined, viz.:

GREEK,

FRENCH,

GERMAN,

NATURAL PHILOSOPHY, including Mechanics, Hydrostatics, and Pneumatics.

4. The following are the text-books used in this examination. Where more than one is named, the candidate may select the one upon which he* will prefer to be examined, viz.:

*The masculine pronoun is used here and throughout the Regulations with reference to "Students" and "Candidates;" nevertheless, these terms are to be construed as applicable to either sex,

LATIN—Cæsar, *Commentaries on Gallic War*, fifth and sixth Books; Cicero, *Manilian Law*; Virgil, *Æneid*, second Book.

GREEK—Xenophon, *Anabasis*, first Book.

FRENCH—Voltaire, *Charles XII.*, sixth, seventh, and eighth Books.

GERMAN—Schiller's *Thirty Years' War*, first Book.

NATURAL PHILOSOPHY—Peck's *Ganot*; Sangster's first Book; Stewart's *Physics*.

On and after July 1st, 1881, intending students must present to the Registrar the Official Certificate of having passed the High School Intermediate Examinations, with Latin included, whereupon he shall be entitled to matriculate and register upon the payment of twenty dollars, and proof of identity.

The said examination to embrace the fol-
jects:

Compulsory:

- a. ARITHMETIC, ALGEBRA, and EUCLID.
- b. ENGLISH GRAMMAR, COMPOSITION and DICTATION.
- c. HISTORY, GEOGRAPHY and ENGLISH LITERATURE.
- d. NATURAL PHILOSOPHY, CHEMISTRY, and BOOK-KEEPING.
- e. LATIN.

Optional:

And one of the following:—

- a. GREEK.
- b. FRENCH.
- c. GERMAN.

At the first annual meeting of the Spelling Reform Association, held at the rooms of the Royal Asiatic Society, London, the following opinion of Mr. Gladstone upon the spelling of the English language was read to the meeting by the chairman (Dr. Hunter):—"There is much that might be done with advantage in the reform of spelling, as to the English language; but the main thing is that whatever may be proposed should be proposed with the weight of great authority to back it. The best plan, if proposed without such authority, will, in my opinion, only tend to promote confusion. I should advise those who are interested, and very justly interested, in this question, to busy themselves not so much with considering what should be done as in considering in what way opinion can be brought to bear upon the matter."

6. Graduates in Arts, or students having matriculated in Arts in any University in Her Majesty's dominions, are not required to pass the Matriculation Examinations, but may register their names with the Registrar of the College, upon giving satisfactory evidence of their qualifications and upon paying the matriculation fee of ten dollars. Graduates in Arts who have attended a course or courses of lectures on Botany and Theoretical Chemistry, and who have already passed an examination on these subjects, will not be required to undergo a second examination on the same, provided they produce tickets for one course of lectures on Botany, and also tickets proving that they have attended two full courses of lectures on Theoretical Chemistry.

7. The valuation of the answers of the several candidates at the Matriculation Examinations shall be transmitted by the Examiners to the Registrar, together with the questions and the written answers of the candidates, within twenty-one days from the close of the examinations, the result being detailed in a schedule to be furnished by the Registrar to the Examiners.

9. Any candidate who shall fail in any branch of his Matriculation Examination shall be rejected; but those who before June, 1878, have passed upon some of the subjects, shall be allowed credit for such subjects at the above examination.

A WRITER in the *Educational Weekly* has been investigating the temperature of school-rooms in winter with some interesting results. He finds the floor-temperature five degrees less than the desk-temperature. He accounts for the lower temperature required in European school-rooms, by the fact that they are warmed by radiant heat; while those on this Continent have the temperature regulated by convected heat. He prefers the former method of heating as the healthiest.

A SCHOLAR in a country school was asked, "How do you parse 'Mary milked the cow'?" The last word was disposed of as follows: "Cow, a noun, feminine gender, third person, and stands for Mary." "Stands for Mary! How do you make that out?" "Because," added the intelligent pupil, "if the cow did'n't stand for Mary, how could she milk her?"

CONTEMPORARY LITERATURE.

THE THEORY OF THOUGHT: a Treatise on Deductive Logic, by Noah K. Davis, Professor of Logic, University of Virginia. New York: Harper & Bros. Toronto: James Campbell & Son.

THERE is probably no science the principles of which are oftener transgressed in this era of wordy disputation than those of Logic, and there is therefore much need of a work which shall be at once popular and exhaustive, which shall retain all the substance of ordinary text-books on the subject, but which may, at the same time, discard much that is technical and formal and enter more fully into detail. Such a want has been, in a great measure, met by the issue of a work by Professor Davis, University of Virginia, entitled the "Theory of Thought." It should commend itself to the student as one of the clearest and most comprehensive treatises on Deductive Logic yet published. It is fuller than Thomson or Jevons, while it is more generally interesting than Hamilton.

It is written throughout in terse, clear English; the matter has been so carefully arranged that each subject discussed fits nicely into place, and follows logically from the subject which precedes it.

The book is divided into five parts. Part I. is introductory and brief. The general scope of the work is indicated. Deductive Logic alone is discussed; while for admitting the importance of Inductive it claims that all Logic Proper is deductive. Our author maintains that Logic is not an art but a science;—not a combination of rules, but an exposition of the principles which necessarily underlie all correct thought. To quote his own words, "It is strictly a science, the science teaching how we do think, and how we must think if we think correctly."

In this part the "Law of sufficient Rea-

son," which some would make a fourth Primary Law, is discussed, and its inutility shewn; he agrees with Mansel in rejecting it as such because "its relation to the judgment is purely negative."

The error of Hamilton, Bain, and others in confounding the "Law of Duality" with that of "Excluded Middle" is shewn by an examination of the former's definition of "Excluded Middle,"—"Of contradictory attributions we can affirm only one thing; and if one be explicitly affirmed the other is implicitly denied." There are evidently two definitions here, the former clause containing the definition of the excluded middle, the latter that of contradiction.

Part II. deals with concepts, and is throughout clear and interesting. This chapter will well repay a careful perusal, especially the practical rules at its close.

Part III. discusses judgments, and while the whole section is worthy of careful study the logician will be specially interested in the discussion of the "quantification of the predicate" which Hamilton, Jevons, and others introduce as something which Aristotle and his followers have overlooked, and the acceptance of which would lead to the addition of a series of judgments depending on it. This principle has received considerable discussion, and has met with general acceptance; but our author rejects it, and the reasons which he gives for so doing are irrefragable. It is specially interesting to a student of the learned and gifted Professor of Logic in University College, to notice the similarity of the steps taken by our author to prove that this principle has no place among the simple forms of the Aristotelian logic. Take any proposition of the form A/A , and although it may be a common form of expression, although it may be natural, it is not a simple form, *e.g.*,

"All triangles are all trilaterals." This is reducible to "every triangle is trilateral and every trilateral is triangular." If Logic were an art there might be an "occasion for the elaboration and symbolizing of compound forms," but defining it as a science, and further a science of the *necessary* laws of thought, such forms as *A/A* and its cognates have no place in it. It is shewn that the "*all*" of the predicate is not a distributed but a cumular, mathematical all; and instead of the predicate being distributed when its quantity is designated, the character of the judgment is changed from a logical to simple mathematical judgment, and the predicate remains undistributed. The treatment of the whole of this part is so analytically clear that it removes one of the chief difficulties in the study of the science.

In Part IV. the Syllogism is treated of, and the formulas so familiar to students of Murray are once more revived, and endorsed.

The defence of Syllogism at the close of Chapter II. is good, and ought to be read by any who hold that it is valueless as a thought producer.

The chapter on Quantitatives, which follows, is admirable. There is no doubt that Quantitatives should have a place in Logic. They are one of the original forms of thought. Nor should there be any doubt that it is nonsense to try to reduce them under the ordinary forms of the Aristotelian Syllogism. While they may be twisted into this unwieldy shape, it is much better to recognize them apart from others, and assign to them special laws as our author does.

Chapter VI., on Conditionals, is another chapter which claims special attention. The question of the difference between Categorical and Hypothetical judgments is discussed, and the conclusion is arrived at that while the spheres of Categorical and Hypothetical judgments may be different the process is one. "There is therefore no such thing as conditional reasoning distinct from the categorical; but all conditional is categorical, and all categorical is conditional."

As the previous parts of the book are

guides to right thinking, so, before the subject is dismissed, we have brought before us in Part V. the various forms of illogical thought. Whether it be from the innate depravity of man and his consequent love of error, or on the principle of Hobbes, that we laugh to see what fools other people make of themselves, I know not, but this is the most interesting part of the book, and not the least instructive.

Another feature of this work commends it to the student, that is, the praxis at the close of the chapter which enables him to test himself on the principles discussed in it.

On the whole this treatise on the "Theory of Thought" is worthy of a first place in the library of the student, or of any one who would think clearly, and understand how he thinks.

SHAKESPEARE'S KING HENRY THE FOURTH. Parts I. and II. Edited, with notes, by William J. Rolfe, A.M. With engravings. New York: Harper & Brothers. Toronto: James Campbell & Son.

IT is almost superfluous to recommend these two neat, compact, and carefully edited little volumes, when such leading Shakespearean scholars as Furness, Dowden, Furnivall and Abbott have praised the series as the best that has yet been produced for school purposes and as surpassing the general run of English school editions. It is our pleasing duty to add our commendation for the manner in which Mr. Rolfe has executed his labour of love. According to his usual plan the books begin with an introduction, treating of the history of the play and the sources of the plot, and containing critical comments by distinguished authors upon the characters and the play generally. These are selected with great care and the most recent publications are laid under contribution. Then follows the text, clearly and handsomely printed, and unencumbered by the commentator's curse of footnotes. The explanatory and critical notes are collected at the end, and commence with a table of abbreviations; verbatim extracts from the chronicle on which the play was founded come next, succeeded by the notes proper, and fitly wound up by a full

index of words and phrases explained. The whole method of arrangement is excellent, and the mode of execution leaves us room to make but few remarks.

In Act I. Scene III., we do not think Mr. Rolfe is right in printing the words—

"Nay, I'll have a starling shall be taught to speak

Nothing but 'Mortimer,'"—

in this manner. The better method appears to us to be to put the "Nay" in a line by itself, which is not at all an unusual thing in Shakspeare, and is peculiarly fitting to the impulsive speech of Hotspur, in fact it is repeated by him on the next page.

Again in Act III. Scene III., we are not sure but that the reading "sneak-cup" which Mr. Rolfe admits is a word to be found nowhere else, is not a misprint for the well known phrase "sneck-up," the sound of the final k having been carried on to the commencement of the latter word, but we venture the suggestion with diffidence. We have less hesitation in saying that the note at p. 157 on the expression "stung like a tench," from which we infer that Mr. Rolfe considers the simile a nonsensical one, is based on a mistake. It is an undoubted fact of natural history that tenches are attacked by parasites, and we need not go as far back as Pliny for authority on the point. In neither part do we have the explanation of the word "sack" given us, being merely told it is a "generic name of Spanish and Canary wines." It was of course a *dry* wine (sec), and instead of the wine merchants of the period transforming it in their laboratories into a sweet wine, the consumer sweetened it to taste with pennyworths of sugar wrapped up in paper and sold by the tappers. It would seem that neither Mr. Rolfe nor Mr. Cowden Clarke (whom he quotes at p. 23 of the introduction to Part II.) quite appreciates the *double entendre* in Silence's remark as to Falstaff, *apropos* of Pistol having declared him the greatest man in the world. "By'r lady," says Silence, "I think a be, but goodman Puff of Barson." Silence's matter-of-fact slow brain is dwelling on physical corpulence, and his conception is

some local fat man with an appropriate name. The commentators appear to think that greatness of position and social standing is meant.

The engravings are from the well-known wood-cuts of Charles Knight, and (except in the figures) are admirable.

THE STUDENT'S HUME. New York: Harper & Brothers. Toronto: James Campbell & Son.

THIS book is the out-come of a great deal of labour, carefully and wisely directed. It retains Hume's best characteristics, and while lacking that breadth of view so prominent and instructive in Green's work, it contains most of what the student is expected to know about English history. The events described are brought down to those of 1878; and the value of the volume as a text book is enhanced by the maps, copious genealogical tables, and reprints of important documents such as the Bill of Rights and Petition of Rights. Though footnotes are not so numerous as to be regarded as a characteristic of the work, the editors have shewn great judgment in inserting them where they are of value; and they supplement them with "Notes and Illustrations" at the end of the chapter when needed. This book will prove of value to three classes of readers: to the student who wishes to get a good knowledge of British history from an authoritative source, and in the compass of 800 quarto pages; to the teacher who wishes to give his scholars more knowledge than the text books on English history in our Public Schools supply; and to the ordinary reader who cannot spare time nor perhaps money to consult more extended works.

HIGH SCHOOLS. By B. G. Northrop, Secretary of Connecticut Board of Education. Syracuse, N.Y.: Davis, Bardeen & Co.

MR. NORTHROP is an educationist with a reputation extending considerably beyond the New England States. If our readers will associate this fact with the opening sentence of this small pamphlet which runs

thus, "The late financial depression furnished an occasion for a general attack upon High Schools along the whole line;" they will understand its purpose. His statement of the "leading objections" urged against Secondary Education in the United States is of interest to ourselves, seeing the High Schools there are of a similar character to our own. He thus enumerates them:

1. The High School is an excrescence on our School System, which has thus been extended beyond the original design of its founders, hence it should be cut off.

2. It is unjust to support the High School by a general tax, because it is patronized by few, and the majority receive no benefit from it.

3. The State has a right to educate its children only so far as will enable them to understand and perform their duties as citizens.

4. The High School tends to create a distaste for labour and to make the children of the masses discontented with their lot.

5. The support of the High School is communistic in its principle and tendency.

6. The High School tends to disparage the Common School studies, and promotes superficiality in these fundamental branches.

7. It tends to pauperize the people by a sort of almstaking that impairs their manliness and self-respect.

8. High Schools prepare few graduates for College.

Though he very effectively answers most of these objections, his aim would have been better served by replying to them categorically; he would thus have saved the reader the distraction caused by finding out what objection the author is really answering; and would have allowed his attention to be fixed solely on the argument.

WITMER'S PHONETIC ORTHOGRAPHY, by Tobias Witmer. Eggertsville, N.Y., 1880.

NOSTRUMS for the improvement of English Orthography are nearly as numerous as are those for the cure of all "the ills that flesh

is heir to." The last attempt in this direction that has come under our notice is by Mr. Tobias Witmer, of Eggertsville, N.Y. There can hardly be a doubt that the author has implicit faith in the efficacy of what he prescribes, although it is not quite clear to us that he is always consistent in the advice he tenders. In his preface he speaks of "alphabetic equivalents and silent letters" having served their time, to be laid away, like fossils, to be studied by future philologists (!) whilst the body of the manual is full of words containing "alphabetic equivalents" and "silent letters" according to the system of spelling he advocates. For Mr. Witmer or anybody else to attempt a method of expressing the sounds of words phonetically, by making use of the existing letters *only*, without resorting to "equivalents" and silent letters, is but to spend labour for naught. Take the following verse from one of his reading lessons, entitled, "The Mocking Bird in the City:"

"Whail strenj-r-throngz rol bai
Lhai song iz lending
Joi tu dhi happi, sudhings
Tu dhi sad;
O'er mai ful hart it floz
Widh jentl blending,
And I am glad."

We shall say nothing as to the digraph in "whail" because it is open to dispute whether our "i" is a pure element or a compound of "a" (broad) and "i" (short,) but what of "th" in "throngz," "dh" in "dhai," and "pp" in "happi?" Again, is not "e" in "o'er" silent? A simple knowledge of the fact that our alphabet leaves some dozen of elementary English sounds wholly unrepresented, ought to prevent anybody from reaching after the unattainable.

On page 33 is a list of words spelt the old way, preceded by the form *Witmer*. In this list we find *duty*, *tutor*, and *newsman* given with the same *u* sound as *hooter*, *coolly*, and *goose-quill*. A note on this page, too, says "When 'duty' is pronounced to rhyme with beauty, 'constitution' with contribution," it may be well to place *f* before the *u* in order to indicate the diphthongal sound; but very many good speakers give *u* its natural Latin or German sound, which, in these

words is etymologically correct." This piece of instruction may be admirably suited to the pronunciation of the "American Language," but is totally *foreign* where English is concerned. "Duty" has only one sound, that which rhymes with beauty, and when otherwise pronounced is no whit worse than to make the latter rhyme with booty. The same may be said of "tutor" and "news-man."

We object also to the Witmerian system of indicating quantity. A dash over the vowel usually expresses what may be termed the alphabetic sounds, but in this manual we find the mark in question used over vowels like *a* in marble. After all, if we except the blundering, there is nothing at all original in "Witmer's Phonetic Orthography," and we can therefore highly recommend it to the Central Committee as being something exactly in their line, if we except the fact of its not bearing the *imprimatur* of a Toronto publishing house, and thus "it would never do."

GREEK MYTHOLOGY SYTEMATIZED, by S. A. Scull. Philadelphia. Porter & Coates; Toronto: Willing & Williamson.

THIS work may be considered a fairly good manual of mythology, and it has the advantage of being well illustrated and beautifully printed. It is a book, moreover, that may be safely put into the hands of girls, as it has been weeded of all the coarser features which the Nature-worship of Hellenes and Italy introduced into the legends of their gods and heroes. The weeding process, however, seems to have been carried a little too far, for the lives, for instance, of Zeus, Ares, and of Aphrodite, cannot be made intelligible if the full story be not told, which can be done with perfect regard to delicacy, as indeed the author has shewn in his treatment of the Trojan War. There strikes us also an insufficient use by the compiler of such books as those of Cox and Max Müller on comparative mythology. A most interesting branch of this study is thus entirely neglected, nor is any account given of the process by which the sun, the sky, and other

natural objects of veneration became personified. The reader is not even told that "Zeus" is identical with the Sanscrit "Dyans," "the shining one!" the sun, or rather the ether. Too much space, it may be also noticed, is taken up with second-rate poetry in illustration of the mythological characters of the book, a matter of regret, when such rich sources of the best ancient and modern mythological poetry were at hand. Still, in young ladies' schools, and in the hands of a competent teacher, the book may be useful.

LOVELL'S ADVANCED GEOGRAPHY, for the Use of Schools and Colleges. Montreal: John Lovell & Son, 1880.

MR. LOVELL'S "Intermediate Geography" received just praise from the press of this country for the completeness and variety of the information it contained, and for the excellence of the maps and illustrations. It was arranged in the form of question and answer, the one best suited perhaps to the requirements of the classes for whom the work was intended. Mr. Lovell has now published the "Advanced Geography," a book the peer of which has not been brought out even in England. It is a credit to the publishing industry of Canada, and to the Ontario Department of Education, which authorizes its use. For in addition to the most complete information on geography, this admirable text-book contains a perfect cyclopædia of knowledge as to the physical conditions, the natural history, and the economic and statistical facts respecting the several countries. These are so fully given as to even exceed the requirements of the ordinary school teaching, while they supply to the really capable instructor a work of reference as full as it is suggestive. The particulars about the various towns and cities of the Dominion and of the United States have been given with accuracy up to the present date, full information being supplied in every case as to products and industrial status. We have fully tested this by reference to innumerable localities in the various provinces, and have been surprised at the accuracy and completeness of the information given,—

in the letterpress, the maps, and the illustrations. The latter are more numerous and of a higher class than we have before seen attempted in any work of the kind. The cities, with their leading features, the natural products and industries, the animals and plants, are all displayed in a series of engravings of first-rate excellence, which are a credit to Canadian artists and engravers, and are fully equal to the embellishments in those American serials, which for the last few years have won such high repute in art of this kind.

But the maps beyond all else are valuable. For accuracy and completeness nothing like them, we are satisfied, has ever been given to the public, certainly not either in English or American school manuals. We have tested them in reference to an experience unusually extensive, as has been said, of various localities in Canada and also in Great Britain and abroad. With regard to the cartography of the work we have been simply astonished at its accuracy, clearness, and fidelity. Although special attention is given to British North America and to the States, this geo-

graphy is remarkable for the fulness of its information with respect to Europe and the less known continents.

Mr. Lovell, to whom we owe this handsome book, with its less ambitious but still excellent predecessor, is indeed a representative man in Canada. His earliest history was associated with the birth and growth of our literature. He was afterwards equally distinguished as a volunteer in 1837, and now has crowned a long list of services to his country by publishing a book invaluable to our teachers, although perhaps beyond the requirements of most of them, and in an artistic and literary point of view, we fear not to assert, unequalled of its kind.

The "Advanced Geography" is peculiarly suited to the needs of the scholar and the man of letters. As a book of reference it will be found invaluable, on a vast variety of topics, social, physical, industrial. There is hardly a point on these subjects in our natural history or statistics which is not treated of. We heartily and confidently commend the book to the profession.

NATURAL SCIENCE AT OXFORD.—The preamble to the statute "for establishing a faculty of natural science and degrees therein" was rejected by Congregation by a majority of 89 to 47. The proposal, it may be remarked, was to make a faculty of natural science co-ordinate with the faculty of arts, to attach degrees of B.N.S. and M.N.S. to it, and to permit in that faculty alone the omission of Greek as a compulsory subject in the earlier stages of the University course. The measure has undergone as many vicissitudes as important measures usually undergo in Oxford. In one stage it has passed, in another been amended, in another altered, in another rejected. In the earlier stages the measure met with favour because it was supposed to represent the wishes of the natural science professors, but it presently appeared that the majority of them, headed by Dr. Odling, were strongly opposed to it, on the ground that the new faculty would rank in public estimation as an inferior faculty. In moving the preamble of the amended statute, Professor H. Smith urged that the University had already declared itself in favour of the proposal, that it was a fair compromise with the opponents of compulsory Greek, and that it would be easy to induce Parliament to extend to graduates of the new faculty the suffrages and other privileges now enjoyed

by the graduates in arts. Dr. Odling, on the other hand, urged that the statute was a sham statute, the whole of its "viscera and vertebrae" having been taken out of it by previous amendments, that the vast majority of the science professors and teachers were against it, and that the Parliamentary aspect of the question was full of difficulty. He urged that the proper solution of the question was to be found in removing Greek from the list of compulsory subjects in the arts course. Professor Nettleship (professor of Latin) followed on the same side, regarding this measure as an attempt to deal by a side-wind with the great question of the relation between the older and the more modern studies. Oxford ought to co-operate with Cambridge, where a syndicate composed mainly of classical scholars had, after collecting the opinions of all the eminent schoolmasters in England, decided to recommend the abolition of compulsory Greek from the honour course in the faculty of arts. Whether his advice would be followed it was impossible to say. It is, however, quite evident that if Cambridge offers the arts degree to those who do not bring up Greek, it will not do for Oxford to offer anything less; and if the scientific men think a natural science degree undesirable, it cannot be forced upon them.—*The Educational Chronicle*.

EDITORIAL NOTES.

"STANDING CRYING IN THE
MARKET-PLACE."

IN this age of universal self-seeking it is not to be wondered at if the teaching profession should in some degree be beguiled into adopting the arts of rival tradesmen. From few quarters, however, is there more danger to be dreaded than this, and unhappily there are indications that higher education particularly is in respect of this matter at the present moment in the gravest peril. Competition amongst our High Schools and Collegiate Institutes has broken out into a fever, and, unless a stronger common-sense on the part of head-masters prevails and a more loyal adherence to the code of professional etiquette manifests itself, our High Schools will shortly enter upon a race with each other that can end only in the degradation of the profession and a sorry cheapening of all that we now prize in our educational system. The Departmental principle of "Payment by Results" is obviously responsible for much of this unwholesome rivalry, as it is also responsible for much that is vicious in the training of pupils. Under that system a perpetual struggle goes on for additional scholars that the Government grant may be increased and the school derive whatever benefit may accrue from the possession of mere numbers. Supply and demand being thus unhealthily stimulated, education in the various branches is sold like wares in a shop, and the heads of the school resort to trade devices which, though they may bring custom to their institutions, secure it at the expense of scholastic and professional degeneracy. At the present moment, when the effort is being made to get rid of self-seeking, in connection with official trading in school-books, it is to be hoped that the zeal of an equally ignoble kind which threatens from

another quarter will be spared to the profession. Its continued indulgence, it may be relied on, will be most disastrous to the teaching fraternity, while not the least of its evils will be the engendering of a partizan and factious feeling among the institutes most lamentable in its consequences. Of course, when the pockets of masters are affected, it is difficult for those whose emoluments are scanty to be either generous or disinterested. That such, as well as the profession at large, are not adequately remunerated is a matter that should enlist the most active public sympathy; but teachers will not be most likely to attract this by making a trade of their profession. Those, particularly, who have to mould the minds and characters of youth, should be animated by fine feeling, and above the motives of sordid gain. We speak in all kindness when we ask masters to desist from practices which their own self-respect should prompt them to discontinue, and to refrain from those acts which compromise and degrade the profession.

OUR NORMAL SCHOOLS.

THE publication in our issue for April last of the experiences of a Toronto Normal School student, in attending the sessions of that institution, has called forth a number of letters in support of the views expressed which we have been slow to reproduce in our pages. One reason for hitherto suppressing this correspondence, we may observe; was this: that we had no ambition to appear oftener than was necessary in the rôle of the "stormy petrel" of the profession. Another and more weighty reason, however, may be cited, viz.: that we were unwilling to form too hasty a judgment as to the merit or demerit of the institution in question, and were more unwilling still, whatever the evidence,

to condemn it. Moved as we have been by these considerations, we yet by no means desire to shirk a duty; and as it has never been our intent to make *THE MONTHLY* the organ of agreeable and conventional falsehood, we must needs speak out. What we have to say about the Toronto Normal School, however, must be understood as coming from students who have had experience of its management, and condemn it. The burden of complaint, from the communications in our hands, seems to run in the line of the criticism already made in these pages,—with this addition, as we are assured by our correspondents, that “one half the truth has not been told.” If this be correct, then the institution, even under the eye of the Minister, is not one upon which our educational system can plume itself, and it is time that its affairs were looked into.

By too many of the Profession the occupation of education is considered little else than a dull routine. How many follow it as an absorbing intellectual pursuit? That there are but few our Normal Schools and the methods of their training are answerable for. The verdict of many students of the Toronto institution, at any rate, confirms this, that the more intelligent of those who attend its sessions find it a loss of time and a profitless engagement. There is, it is said, defective management and indifferent teaching. We are also told that there is little serious application on the part of the masters, and no strenuous intelligent labour bestowed upon the work. The practical teaching in the Model School, it is admitted, is valuable. This, however, is the only adequate return students receive for their attendance. For the rest, they might as well be at home; better, indeed, if the time were devoted to reading some of the modern text-books on the science of their Profession. This state of things, if the testimony in our hands is to be relied on, calls for an immediate inquiry. Both Normal Schools cost the Province a large annual amount, and if the outlay does not provide a professional training of the character and quality which the money is understood to purchase, the public ought to be aware of

the fact. There is too much at stake, in connection with education, to have any doubts about this matter, and the Minister will do well to give it his attention, and to subject the working of the institutions to competent and exhaustive examination. In the attention he is giving at present to university affairs, it might be well for him to consider whether the establishment of a chair of Pedagogy at the University, with the practical training still secured to students at the Model School, would not be preferable to the maintenance of institutions which can be shewn to be costly, and, from all accounts, inefficient.

THE FIRST OF THE THREE R'S.

PRESIDENT ALEXANDER'S Address at the late session of the Ontario Teachers' Association, and the paper of Mr. R. Grant White in the present number of *THE MONTHLY* wisely direct renewed attention to the subject of elementary education and particularly to the study of English. Their complaint is that the fundamental or elementary branches are not successfully imparted, and that in the school curriculum, as it is generally framed, sufficient prominence is not given to the subject of Reading. Unhappily what is said cannot be controverted; and it is to be regretted that so obvious an essential as instruction in the art of reading should be so indifferently recognized, or, if recognized, have so meagre a place assigned to it in the schools. With the diffusion of ideas on education it is somewhat curious that so little common sense manifests itself in regard to an instrument of training which, to the English child, must be the channel of all information. Yet we go on “cramming” and extending the range of studies—and this beyond what is fairly possible to accomplish in most schools—while the most important of all subjects is left to take its chance with a hundred other extracts of knowledge. We trust that the attention which has been called to the matter will lead to some practical results, and that the “time-tables” will in the future deal more generously with the simple English branches, even if some subjects con-

sidered vital should be struck from the lists. In the public schools, at any rate, there is no reason why Reading should not have all the time bestowed upon it that its importance demands. If the Regulations were made elastic and the teacher allowed more discretion, we feel sure that Reading as an exercise would be the gainer. In all grades of schools, so far as the teacher is concerned, the desire is to simplify rather than elaborate educational operations. It is a pity that the Department does not recognize and give effect to this. Of recent years there has been a too-much withdrawing of attention from necessary to showy subjects of instruction. This policy should at once be reversed, and every encouragement given to training in the substantial rudiments of our mother tongue. It is almost generally admitted that too much time is given to Mathematics, and that a good deal of what is taught in this branch is of a fancy kind. Without unduly discounting that science, it is absurd that it should be pursued to the exclusion of subjects of more practical value. Let it have its place, but let us at the same time recognize how little it contributes to mental cultivation. Reading, at all events, must have more attention, as only upon this foundation can anything be reared in the way of culture and sound learning.

THE SUPERANNUATION FUND.

THE teacher who had the temerity to catechize the Minister of Education at the recent session of the Provincial Teachers' Association as to what was being done by the Department on the subject of Superannuation was really entitled, we think, to more consideration at the hands of Mr. Crooks than it can be said he received. Both the questioner and the Profession at large are deeply interested in the policy of the Department as to a matter which vitally affects the future of all of them, and though the gentleman from South Grey was perhaps a little blunt in his demand upon Mr. Crooks, the Minister should not leave the matter so long in doubt as to the character and extent of the provision the Department intends to make for

teachers who have put in a lengthened service, and whose savings, under the most favourable conditions, can be but trifling.

INDUSTRIAL SCHOOLS.

ATTENTION has been directed to the large number of children who receive no education at all, by the interesting Report of the News-boys' Lodging, fostered by Professor Wilson. We have already directed our readers' notice to this blot on our educational system in the review of the Minister's Report on Education. We see no way of gathering this class of our children into the schools but by a compulsory law, vigorously carried out. The increased expense attending this would have to be liberally shared by the Government, in supplementing the efforts of those school corporations whose duty it should be to carry out the law. We know of no way in which public money could be better spent than in saving this class of children from becoming feeders to our criminal population, as they are in every danger now of becoming. The present Government have shewn that they are alive to the necessity of attending to our criminal class by building the Mercer Reformatory for women. But prevention is better than cure: it would be better to get control of the boys and girls before they become candidates for the Central Prison, or the Andrew Mercer Reformatory, and train them, not only in knowledge, but in industry, so that they would have the means of earning an honest living. It is true we have the Penetanguishene Reformatory; but this institution deals with boys who have been once convicted, and are therefore already to some extent inured to crime. We want industrial schools similar to those under the management of the London School Board, and placed under the direction of men and women of large experience in the management of children. We emphasize this latter point in view of the character of some recent political appointments. It does not augur well for the purity of purpose of our Local Government, when they passed over the whole profession of High and Public school teachers in the Province, and selected a

Toronto hatter to take charge of the Penetanguishene institution, whose only qualifications were, that he was a politician of the right stripe, and in need of a berth.

UNIVERSITY APPOINTMENTS.

MR. CROOKS's wayward and maladroit course in connection with the University College appointments is sincerely to be deplored, not only by his political and personal friends, but by all who desire to see the Minister acquit himself of the duties of his important office with credit and approval. As we go to press we notice with regret that criticism has once more broken out over the appointments to University positions which the Minister of Education has recently made in connection with the classical chair, the tutorship in classics, and the vacant office of Dean of residence. Conceding the probable necessity to go to England for a successor to Dr. McCaul in the chair of Classics, there was surely no occasion to import a classical tutor. Still less does there seem to be necessity to confer the Deanship upon a new comer. These appointments cannot fail to give grievous offence to the graduates of the Institution, and we shall not be surprised if the Minister's actions are sharply criticised and loudly denounced. The arrangement under which the classical professor comes out is understood also to give great offence to the faculty. It is a pity that Mr. Crooks has not better learned "the art of doing things."

If we wish to know where the profession of teaching is most honoured and best provided for, we must go to Brazil. The teacher in Brazil, having once passed a satisfactory examination, becomes a Government official for life, and is promoted, not as vacancies occur, but according to his term of service. After five years' service, during which he has a comfortable salary with house-rent, he receives a small pension, and for every scholar above thirty, which is supposed to be the average number in country schools, he gets, as addition to his salary, an equivalent equal to one-third of the estimated cost of each

pupil's tuition. When sick, or disabled, a small extra pension is provided. After ten years' service, the salary, pension, and perquisites are doubled. After twenty years it is again increased, and a life-insurance policy is then bestowed upon him by the Government, sufficient to keep his family from want in case of his death. After thirty years he is put on the retired list, and receives the same pay as army or navy officers of a certain rank; but he may even then continue to teach and to receive a regular salary.

MR. RICHARD GRANT WHITE, whose interesting article on *The Decay of Reading* will be found elsewhere in our pages, has just compiled a number of his contributions to the press on "Every-day English." They treat of speech, writing, grammar, words and phrases, etc., and point out the errors which abound in our common use of English. The book will be found attractive to more than purists and pedantic critics of the language.

MESSRS. HARPER BROS. have just reprinted a volume of high interest to the student of English Literature under the title of "Four Centuries of English Letters." It consists of selections from the correspondence of one hundred and fifty writers, from the period of the "Paston Letters" to the present day.

AN excellent work on practical self-culture, moral, mental, and physical, has just been brought out from the pen of Mr. W. H. Davenport Adams, the compiler of the "Dictionary of English Literature." The book is entitled "Plain Living and High Thinking," and is dedicated by permission to the Right Hon. Mr. Gladstone.

MESSRS. JAMES CAMPBELL & SON have just issued a manual of Trigonometry from the pen of Dr. Morrison, Head Master, High School, Walkerton, which we shall notice in our next.

MESSRS. WILLING & WILLIAMSON have just arranged for a Canadian edition, at a cheaper rate, of Abbott and Seeley's "English Lessons for English People."

THE OLD BIRCHEN SWITCH THAT HUNG ON THE WALL.

How dear to my heart are the school-days of childhood,
 When no care nor contrition my wild spirits knew,—
 The orchards I robbed, our larks in the wildwood,
 The school-house and grove where the birch-switches grew ;
 The row of mud-pies with toe-marks imprinted,
 How they rush to my sight at fond memory's call ;
 The old cider-mill with draughts never stinted,
 And the switch that hung high on the old school-house wall.
 How the youngsters assembled in terror oft trembled,
 As that hide-cutting switch came down from the wall.

That knotty old switch in my mind is abiding,
 For oft, when returned with some wild truant band,
 I received, with that switch, a most merciless hiding,
 The toughest and sorest boy-nature could stand.
 Unlike the old bucket no moss was adhering,
 No white-pebbled bottom was touched when it fell,
 No pure sense of coolness e'er marked its appearing,
 But I marked each descent with a jump and a yell.
 Oh, I viewed it with loathing, for no underclothing
 Broke the force of those blows as so swiftly they fell.

I remember with trembling one grim little madam
 Who taught me the rudiments, pot-hooks, and all,
 And who thought to expel all the sin left by Adam,
 By thrashing it out with that switch on the wall ;
 I've been horsed o'er the knees of that maiden so human,
 With my back to the foe and my face to the floor,
 And I thought how fools prate of the soft touch of woman,
 For each touch drew a blister, each stroke woke a roar,
 In that day of tough switches and very thin breeches,
 When correction was pressed both behind and before.

I survived all the blows, and married the daughter
 Of that muscular schoolmarm whose blows fell like rain ;
 Now her roguish grandchildren defy her with laughter ;
 Their tricks she approves,—mine she punished with pain.
 And though I remember of no interceding
 When she put in the licks with a switch or a rule,
 If a grandchild I spank there's a grandmother pleading,—
 'Tis the granny who whaled me of old in the school,
 With the toughest of switches, her sharpest of switches,
 That started a rogue like the kick of a mule.

How we boast of advance in the secrets of learning,
 How to cram the young heads we take infinite pains,
 And forget inward pangs yield to blisters and burning,
 That the switch hath oft quickened both conscience and brains.
 To four minor senses we're often appealing ;
 Each one to our aid, in correction, we call,
 But that old bottom sense, the keen sense of feeling,
 No longer the rogue doth persuade or appal !
 Yet to quiet confusion, or force a conclusion,
 There's a mission to-day for that switch from the wall.